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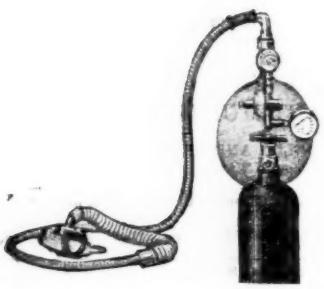

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LECTURE I.

[IN ABRIDGED FORM.]

MR. PRESIDENT, LADIES, AND GENTLEMEN,—It is my first and most pleasant duty to return thanks for the honour of selection as Goulstonian lecturer. It is common with lecturers to claim indulgence, but I fear that in my own case the plea is unusually necessary. If the experimental part of the evidence which I lay before you is incomplete, and in cases fragmentary, I would ask you to remember that the circumstances of the past year have rendered research work of any kind far from easy.

In selecting a subject for such lectures as these one's thoughts naturally turn to those aspects of medical work which have recently impressed themselves most forcibly on the attention. While serving under Colonel Hunter in Serbia during 1915 it was my lot to be witness what was, I suppose, when considered in all its aspects, one of the most terrible epidemics of recent times. Since my return to work at my own hospital the routine examinations in the laboratory, especially in connexion with the military wards, have kept constantly before us the bacteriological aspects of preventive medicine as applied to war conditions. It seemed, therefore, not unnatural to attempt to bring together such data as we possess with regard to the spread, and especially the epidemic spread, of bacterial infection; and to supplement it, if possible, by experimental inquiry in the hope that the result might be of interest to others, and the certainty that the exercise would at least be of benefit to myself.

THE WAYS OF APPROACHING THE QUESTION.

The subject under discussion may be approached from at least three sides, the epidemiological, the bacteriological, and the biometrical. The first and third may perhaps be regarded as identical, but the statistics of the epidemiologist, who is concerned mainly with the historical and geographical aspects of his subject, differ so widely from those mathematical methods more recently evolved that biometrics has developed a technique which it seems better to regard as belonging to a separate branch of biological science. While it is with the bacteriological aspect of the question that I am here mainly concerned, yet it is impossible to consider one side of the problem alone without losing all sense of proportion.

The Epidemiological Aspect.

If we survey the results hitherto obtained in the epidemiological and bacteriological fields we note at once that the two lines of inquiry tend to emphasise two different aspects of the phenomena observed. The epidemiologist puts before us a picture of certain diseases, varying often in their less important details, but showing a remarkable conformity to type when the whole aggregate of manifestations is considered, which arise for some unaccountable reason and attack a larger or smaller portion of the population living at the time. After causing ravages of greater or less extent they seem to disappear again only to reappear after a longer or shorter interval, and again run their course. Moreover, each successive visitation bears a striking resemblance to its predecessor, though the total number of cases, the total mortality in any one centre of population, and the distribution of the epidemic over the inhabited parts of the earth, vary greatly from one outbreak to another.

Thus epidemiology tends to lay stress on the constancy of a disease, as some process which continues through long ages of history, now rising to a climax, now relapsing into insignificance, but remaining a constantly menacing factor among the mass of circumstances that constitute the environment of our species. Thus it is possible to trace some of our epidemic diseases back into the dark ages of medical history, and though we have only to go back a little way, as regards historical time (to say nothing of time as it is regarded by the biologist or geologist), to find the way confused and the shapes before us vague and doubtful, yet we can trace likenesses that leave us in little doubt that most of the enemies with whom we are now engaged have troubled our fathers before us.

Bacteriological Lines of Inquiry.

When we turn to the bacteriological aspect of the question we find a very different picture. Workers in this field have been more concerned with the minute investigation of comparatively small samples of cases than with the broad view of an epidemic of disease as a biological process. By these investigations they have been able to identify the causal organism of certain of the more important communicable diseases, and in recent years have brought forward data of the greatest importance for a better understanding of the factors involved in the spread of such infections. The foundations of bacteriology, indeed, rest on Pasteur's observations on the nature and prevention of infections characterised by their ready spread.

Rapid advance in the investigation of epidemic disease along bacteriological lines has, however, been so far prevented by two outstanding difficulties. The very diseases which would afford the most favourable field for study are just those in which the causal organisms are unknown. Scarlet fever, measles, small-pox, and chicken-pox, to mention only a few of the more outstanding examples, still await a satisfactory elucidation from this point of view. We have lost faith in one of our supposed causal organisms during the world-wide influenza epidemic which is still with us, and already there are many claimants to the vacant place, but no one of them has yet established its position.

The other great obstacle we have to face is our inability to convey to laboratory animals diseases as they occur in man. We can produce lesions of a definite and specific nature in the majority of cases, but not the actual disease in all its features, and among the features most frequently lost is that tendency to spread of infection which we should specially desire to study.

In spite of these limitations much has already been accomplished, and though much remains to be done there is little doubt that we are steadily gaining that knowledge which, if properly applied, will enable us to deal effectively with the great problem of infective diseases.

In any attempt to form a bacteriological conception of the processes involved in the epidemic spread of infection the ascertained facts of epidemiology must be kept constantly in mind.

THE MAIN PROBLEMS.

We may commence by asking ourselves what are the main problems to be solved and the most striking phenomena to be accounted for, assuming, as we have, I think, the right to do, that the organisms which the best bacteriological opinion regards as having established their causative rôle, do indeed play that part in the diseases in question, and that in other cases we are dealing with an unknown cause of essentially similar nature.

Considering the general picture presented by the historical and geographical data concerning any one of these diseases which have from time to time assumed an epidemic form, the questions that force themselves most prominently before us are probably the following:—

(1) Since the outbreaks are separated from one another by intervals of time, during which there may be a complete absence of the disease in its classical form, it is necessary to explain how and why the specific virus remains dormant for periods often extending over many years.

(2) If we can obtain a reasonably complete answer to this preliminary question, there remains the problem of why it is that the dormant virus periodically awakens to activity and gives rise to those outbreaks of disease which, in their pandemic or epidemic forms, show such strikingly constant characteristics. In seeking an answer to this question it will be necessary to include as facts to be explained those well-known preliminary phenomena which so often precede the appearance of an epidemic.

(3) If it be possible to form some reasonable conception of the causes which originate an epidemic it will still be necessary to show that such causes, operating further, will tend to produce the phenomena which are to be observed in the rise and subsequent subsidence of the wave of disease.

Any tenable theory must thus explain the constant presence of a specific cause of disease through long periods of time, the periodic reappearance of the disease in epidemic form and the characteristic form of each such wave of disease in its rise, crest, and subsidence, leading to another disease-free period.

THE HUMAN CARRIER.

The gradual accumulation of evidence pointing to the importance of the human carrier as a factor in the persistence of a bacterial virus during inter-epidemic periods has profoundly altered our conception on these matters. In how far persistence in soil, water, or other inanimate habitats may contribute to the preservation of pathogenic bacterial species, we have no certain knowledge; nor have we in most cases adequate data on the prolonged existence in other animal hosts of bacteria potentially pathogenic for man—a factor which is probably of far greater importance. The fact which has been brought into prominence, and which has been more and more clearly established as a general law, is the continued parasitic existence in man of bacteria known to be capable of causing disease, without the actual production of the disease in question.

The extensive studies which have been carried out in connexion with the carrier problem have yielded data of the greatest value concerning the relative distribution of such parasites at epidemic as contrasted with non-epidemic times, and especially in epidemic as contrasted with non-epidemic areas. The position as it stood in 1912 is admirably summarised in Ledingham and Arkwright's "Carrier Problem in Infectious Diseases." Very thorough investigations have been carried out during the past four years in connexion with those epidemic diseases which have assumed special importance under war conditions, and the results, as set forth in various reports to the Medical Research Committee, to the Local Government Board, and in other papers, afford data of the highest significance.

Without considering in detail the bacteriological evidence in connexion with each of those epidemic diseases in which knowledge of the causative parasite enables us to pursue an inquiry along these lines, we may summarise the relevant facts which have come to light, sometimes in one disease, sometimes in another, but which are being more and more surely established as general principles by the gradual accumulation of evidence.

SUMMARY OF PRESENT KNOWLEDGE.

It seems to be a general law that, where a given bacterial infection is associated with the presence of the causative parasite in certain excretions or on certain mucous surfaces, the tendency is for the organism to persist in such situations for a certain short interval, usually a few weeks, and then to disappear. In some cases, however, it persists over much longer periods, sometimes, as in certain typhoid carriers, for 25 years or more. These chronic carriers form a relatively small proportion of the persons infected, and in many cases there is a well-defined association between the carrier-state and some other pathological condition in the host. Thus typhoid carriers are especially common among those persons who are suffering from lesions of the gall-bladder, and hence the condition occurs more frequently in women than in men. Similary the presence of enlarged and unhealthy tonsils would appear to contribute to the persistent carrying of the B. diphtheriæ.

In the case of many bacterial parasites there is ample evidence that pathogenic species are distributed fairly widely throughout the general population, and it seems probable that, if any large sample of the community could be minutely investigated, most of those bacteria, which are recognised to be the cause of the epidemic diseases natural to the locality concerned, would be detected in one or more of the individuals examined.

Carrier-rates among Contacts and Non-contacts.

If such an inquiry be carried out in an area in which an epidemic is actually occurring it will be found that a proportion of individuals, in apparently perfect health but who have been in more or less intimate contact with cases of the disease in question, are harbouring the specific parasite. Moreover, the percentage of such carriers among healthy contacts will be considerably higher than among the general non-contact population. Thus Graham-Smith, from collected records of 2132 carefully-made observations, gives a figure of 0·18 per cent. as representing the carrier-rate of virulent diphtheria bacilli in normal non-contacts, while the same observer found a carrier-rate of 10·4 per cent. among a sample of normal contacts. Stillman records a carrier-rate of 0·33 per cent. for Type 1 Pneumococci among 297 normal non-contacts, but a rate of 14·9 per cent. among 107 healthy contacts with cases of lobar pneumonia due to infection with a coccus of this type, and a multitude of similar examples could be quoted.

If a comparison be made between healthy contacts, healthy non-contacts resident in an infected area, and healthy non-contacts from an area free from the disease in question, the carrier-rates obtained may be found to form a descending scale. Flack reports a meningococcal carrier-rate of 8·53 per cent. among 1629 healthy contacts, of 5·53 per cent. among 651 healthy non-contacts from epidemic areas, and of 2·18 per cent. among 275 healthy non-contacts from unaffected localities. It is a point of some interest that, during a considerable epidemic, the carrier-rate among healthy non-contacts may equal that among healthy contacts as demonstrated by Glover in the case of the Meningococcus.

If, instead of examining perfectly healthy contacts, we confine ourselves to individuals resident in an epidemic area, and suffering from some mild atypical infection of doubtful nature, which shows no clinical identity with the epidemic disease, we find a sharp rise in the percentage of persons from whom we can isolate the specific organism. Thus we may compare the 70 per cent. carrier-rate for B. diphtheriæ obtained by Köber when examining 139 contacts suffering from mild sore-throats with the 10·4 per cent. rate quoted above for healthy contacts. Similarly, Billet, Le Bihan, and others, while investigating an outbreak of typhoid fever in an infantry regiment, examined the fæces from 64 atypical febrile cases which could not be diagnosed as typhoid on clinical grounds, and isolated the B. typhosus in 13 instances, a carrier-rate of 20·3 per cent., which is vastly greater than that ever found in healthy contacts.

Rise and Fall of Carrier Rates in Relation to Epidemics.

In the case of cerebro-spinal fever certain additional facts have been established which are of the greatest significance. It has been shown by many observers that the rise in the meningococcal carrier-rate quite definitely precedes the outbreak of an epidemic. So uniform is this phenomenon that it has been possible to set up a tentative limit of 20 per cent. as a danger-line, and to regard a rise in the carrier-rate beyond this figure as a warning of the imminence of an epidemic. Moreover, it has been established in the case of this disease that a decline in the carrier-rate precedes the decline of the epidemic in some cases, and in others occurs more rapidly; so that it is usual for the percentage of healthy carriers to sink to a relatively low level while cases of the disease are still occurring. (Bruns and Hohn, 1907; Hutchens, 1916; Johnston, 1916; Glover, 1918, &c.) The association of a high carrier-rate with overcrowding has been noted by many observers, and Glover has given a striking demonstration of the way in which the rate may be caused to fall by simply spacing out the beds in a sleeping apartment.

The Virus of Scarlet Fever.

If we turn from those diseases, in which knowledge of the causative organism allows the problem to be studied from the bacteriological point of view, to other diseases in which such knowledge is still lacking we find that clinical and epidemiological studies have yielded results pointing in no uncertain way to conclusions similar to those arrived at by research along bacteriological lines.

Thus Butler, in a careful study on "The Intermittent Infectiousness of Scarlet Fever," finds ample clinical and statistical evidence to support the view that persons recovered from scarlet fever may convey the infection to others after intervals of long duration, while those who have never suffered from a typical attack may convey the disease to persons with whom they come in contact. He points out further that a statistical inquiry into the frequency with which sore-throats in other members of a household precede a fully developed attack of scarlet fever in one of them, leaves little doubt that the typical case may be the result of infection from the atypical one.

He concludes that there is little need to assume an extra-corporeal habitat for the virus of this disease, if we exclude

milk, acting as a direct cultural material, and considers that the facts point rather to the continual diffusion among the population of the scarlatinal virus, which from time to time is communicated from person to person in such toxic quantity and degree as to give rise to the typical sporadic or epidemic disease.

Epidemic Diseases of Plants.

It would be of the greatest interest to look for analogies in the epidemic diseases of plants. The relative simplicity of the conditions would seem to afford hope that the essential processes might be traced more surely than in human and animal pathology, and that we might thus gain further insight into those general principles which must surely underlie the phenomenon of epidemic parasitic disease of all kinds.

Professor Blackman, whose opinion I have asked on this point, and who has most kindly given me the benefit of his special knowledge, has pointed out to me the difficulties that lie in the way of arguing from plant to animal disease, or vice versa. The structure of the plant-hosts does not seem to afford the opportunity for the continued existence of a parasitic flora apart from disease, if we exclude cases of true symbiosis. There are no regions comparable to the respiratory and alimentary tracts, within the body yet outside the tissues, in which such a flora might readily persist. Moreover, the annual death of many of the host species, with the intervention of a relatively long period before the appearance of a new generation, introduces a factor which is altogether absent in the diseases affecting man and animals.

Another factor which makes difficult comparison between plant and animal pathology is the relative complexity of the tissue changes, and especially of the immunity reactions in the latter. The existence of a specific parasite in a plant itself constitutes disease; in man and animals it is only one essential factor.

It seems that we must be content to await further advances in our knowledge of parasitism in general before attempting to coördinate the facts throughout the whole field, but it is impossible to doubt that closer coöperation between investigators in all branches of biological science would be of mutual benefit, and would throw light on many of our most difficult problems.

THE CONCEPTION REACHED.

If we now glance back and see to what point our inquiry has so far led us, we are left with some such conception as the following:—

The first difficulty with which we were faced in forming any theory of the spread of bacterial infection, which should conform to the known facts of epidemiology, was to find some explanation of the perpetuation of the virus during inter-epidemic periods. The bacteriological data which have been accumulated, especially during the last 20 years, have shown that the causative organisms of specific diseases are to be found in apparently normal persons who give no history of having been in contact with the disease in question, as well as in healthy contacts with actual cases of the disease. Moreover, the organisms in question have been shown, in certain cases, to persist for long periods of time in or upon the tissues of their hosts, and we must always remember that the difficulty of bacteriological technique is likely to lead to a serious under-estimate.

Clinical and epidemiological investigations have yielded confirmatory evidence, and we are thus left with a conception of the virus of a given disease being distributed fairly widely throughout the world as an apparently harmless parasite on the human host, but taking on during epidemic periods a new and sinister rôle, only to relapse again into comparative quiescence as the epidemic subsides.

We have seen that while the organisms we have considered can live as harmless parasites on normal and healthy persons, yet they become much more plentiful when we examine healthy contacts, and more plentiful still if we are dealing with persons in an epidemic area who are suffering from atypical and apparently unimportant illnesses. Thus we find that a clinically typical case of a given disease tends to be surrounded by certain atypical cases, from whom the causative organisms may be recovered by suitable methods, and by a much wider circle of healthy individuals, many of whom are acting as carriers of the parasite in question.

LECTURE II.

It is important to keep clearly before us that the facts as to the distribution of the bacterial parasite during the epidemic period may be interpreted in two ways. It is perhaps natural to focus our attention on the case of disease, and regard it as the centre from which spread the atypical cases and the healthy carriers. There is, on the other hand, the alternative hypothesis that the distribution of the parasite is the expression of a biological process which has preceded the outbreak of disease, and that the typical cases are merely the final results of this process. We should not, of course, minimise the importance of case-to-case infection, nor cease to believe that large numbers of contact carriers derive the parasites they harbour from the sick individual.

THE EPIDEMIC CURVE.

If we now turn to the consideration of those epidemiological facts which must be regarded as fundamental in any attempt to form a bacteriological, or, as I should prefer to regard it, a biological conception of the processes involved in the rise and fall of a wave of disease, we find certain phenomena which from their very constancy must be regarded as of primary importance as clues to the solution of the problem.

The most striking feature is undoubtedly the symmetry of the epidemic curve. This phenomenon has been emphasised by countless epidemiologists. The problem has been clearly enunciated by Brownlee, who shows that certain deductions may be drawn with regard to the possible factors involved in the rise and decline of the wave.

We must, then, be prepared to show that those causes which bring about the rise of the wave of disease will, by their continued operation, directly or indirectly give rise to a subsequent decline in a way that is compatible with the symmetry actually observed. It seems certain that the processes leading to the fall of the wave must be the essential consequence of those causes which determine its rise. The constancy of the whole process could hardly be otherwise explained.

There are other features characterising considerable epidemics which must be taken into account, and which yield significant clues. Among these we may particularly note the occurrence during the earlier stages of an epidemic of atypical cases of disease and the reappearance, to a less extent, of these atypical cases during the latter part of its decline.

The periodicity of epidemics and the explanation of the long epidemic-free interval in certain cases form another aspect of the problem which will be referred to later.

Origin and Rise of Epidemic Wave.

Considering, then, the rise and fall of the epidemic wave, it is necessary first to find some explanation of its origin and rise. There are at least three possible explanations—an increase in the power of the parasite to produce disease, a decrease in the resistance of the host, and some alteration in the surrounding circumstances which favours the transference of parasites from case to case without any alteration in the pathogenicity of the one or in the resistance of the other. The third of these hypotheses may, I think, be disregarded. That alterations in environment may be the determining cause in initiating an outbreak of bacterial disease is probable enough; but they will almost certainly act through the variations which they bring about in the other two factors. The whole of bacteriological knowledge is clearly against the occurrence of a considerable epidemic in which the pathogenicity of the parasite and the resistance of the host remain constant.

Again, while we may well believe a lowered resistance of a certain number of the host-species to be an important factor in the initiation of the process, yet we cannot believe that it is the whole story. The widespread ravages of many epidemics would seem altogether to preclude such an explanation. We seem forced therefore to the conclusion that an increase in the pathogenicity of the specific parasite is an essential factor in the rise of epidemics, excluding from this category small sporadic outbreaks which may be due to the introduction of a fully virulent parasite by a healthy carrier or in some other way.

Decline of Epidemic Wave.

When we consider the decline of the epidemic we are faced with three similar possible factors—an alteration in

the parasite, now in the direction of lessened pathogenicity; in the host-species, in the direction of heightened resistance; or in the environmental conditions, resulting in lessened opportunities for the transference of the parasite. There is, indeed, in the case of any considerable epidemic, a fourth possibility: the elimination of all susceptible individuals by an attack of the disease. This explanation has been unanimously rejected by epidemiologists on various grounds. Brownlee, in the paper referred to above, shows that it is entirely incompatible with the observed symmetry of the epidemic curve, and that a progressive variation in the biological activities of the parasite seems to offer the most satisfactory explanation of the facts observed. But, while there seems little room for doubt that increased pathogenicity of the parasite must play an essential part in the rise of the wave of disease, it is much more difficult to decide on the relative importance of variations in the powers of parasite and host in bringing about its decline.

DEFINITION OF TERMS.

It is important at the outset to define our terms. "Resistance" or "immunity" expresses the sum of the defensive powers possessed by the host. When, however, we turn to the parasite, we find several terms used to denote its powers of attack, and the limits of their implications are not always clearly defined.

"Pathogenicity" denotes simply the power of producing disease, without reference to the manner in which it is brought about. It is a property of those organisms which never cause extensive tissue invasion, but which produce their effects by means of powerful exotoxins, just as much as of those organisms which give rise to a generalised infection. In referring to an organism as pathogenic for man we imply that it produces disease under natural conditions; that is, it is naturally infective, though the degree of infectivity need bear no relation to the degree of pathogenicity. When we state that an organism is pathogenic for laboratory animals there is no necessary implication that it can produce disease under natural conditions.

"Virulence" has come to mean the power of a parasite to multiply within the tissues of the host. An organism which is highly pathogenic need not necessarily be virulent. Conversely, it is possible, though rare, for a micro-parasite to be virulent but non-pathogenic. The rat trypanosome seems to afford an example, but there is no strict parallel among bacterial parasites. Virulence is indeed an elusive term. It is actually employed to express the power of bringing about a generalised infection of the host. It pays no heed to any possible variation in the power or rate of multiplication in different tissues, nor to the capacity for bringing about that initial invasion of the tissues on which subsequent events depend. Still less is virulence synonymous with infectivity; and this is a point which seems to be too little regarded in many epidemiological and bacteriological studies.

As commonly employed, the term "infectivity" denotes an attribute not of the parasite but of the diseased person, an attribute, moreover, which depends on the patient's environment quite as much as on himself. The infectivity of the typhoid patient or carrier is in inverse ratio to his personal cleanliness and to the perfection of the sanitary arrangements under which he lives. It is in direct ratio to his opportunities for contaminating food or drink. The malarial patient is infective in the presence of the anopheles mosquito, how infective recent military experience has demonstrated. In a district free from appropriate insect hosts the same patient is no danger to the community.

If we employ the term "infectivity" in speaking of a bacterial parasite, we should mean that, under the conditions existing in nature, it is in a favourable position to obtain transference to a new host, and that it is possessed of those biological attributes which will enable it, when so transferred to give rise to that sequence of events which constitutes an attack of disease.

It is incorrect, therefore, to state that an increase in the virulence of a bacterial parasite will conduce to epidemic spread of the disease to which it gives rise. It will only do so if there is an adequate degree of infectivity. In an epidemic of any disease in which virulence of the parasite is an essential factor we need an increase in both attributes to fulfil the conditions required.

SAPROPHYTIC SPREAD OF ORGANISMS.

In attempting to trace those processes which lead to the acquirement by the parasite of the attributes which enable it to give rise to a wave of disease, it is necessary at the start to form some conception of the manner in which it spreads from those relatively scattered centres in which we believe such organisms to exist in inter-epidemic periods.

It is of interest in this connexion to turn again to the case of cerebro-spinal fever. The evidence which has been collected with regard to this disease has already been referred to, but two further facts may be emphasised—the relatively small number of the cases of disease in any epidemic in comparison with the very large number of persons who are carrying the meningococcus, and the frequent absence of any ascertainable connexion between successive cases.

Consideration of all the available evidence has led to a conception of the spread of this disease which has met with very general acceptance, and which is clearly outlined by the authors of the recent report issued by the Medical Research Committee. It is suggested that the real epidemic consists of a widespread dissemination of the Meningococcus, as a saprophyte, in the throats of the population at large. The organism is regarded as being only a potential tissue-parasite, and as having only a low degree of virulence; so that in normal times its spread is associated only with cases of disease among the most susceptible elements of the community, that is, among infants. At times, however, the organism seems to acquire an increased virulence, and its spread is associated with a larger number of cases and with the attack of young adults who are usually immune.

Is it possible that such a saprophytic spread forms the initial stage of epidemics in general? Assuming that it does so, it is necessary to inquire whether there are valid reasons for expecting such a process to culminate in the elaboration of more infective and more virulent varieties of the parasite concerned. Certain recent observations would seem to afford ground for an affirmative answer.

RATE OF MULTIPLICATION OF BACTERIA AND VIRULENCE.

The rate of multiplication of bacteria in a fluid culture medium has been investigated by many observers, and more recent observations by Penfold, Ledingham and Penfold, and Chesney have yielded information of a very precise nature on this point. It has been shown that there is a "lag" phase, in which multiplication of the bacteria increases in rapidity, at first slowly and then more quickly, until a uniform rate of maximum or logarithmic growth is attained. After a time the rate of multiplication decreases, eventually giving place to a phase in which the death of organisms exceeds the rate of generation.

The relation of virulence to the phase of growth of the inoculated culture has recently been studied by Wadsworth and Kirkbride in the case of the Pneumococcus. Their results show clearly that an organism which exhibits only a low degree of virulence when injected in the form of a 24-hour culture in liquid medium may be highly virulent after being allowed to grow for 6–8 hours only in the same medium. The authors quote results which they believe to indicate a definite increase in virulence of a strain of pneumococcus by repeated subculture at 8-hour intervals, but a close study of the data given leaves a doubt whether the whole matter is not explained by the coincidence in any culture of the phases of maximum virulence and maximum rate of growth. This one point is, in any case, clearly established, and we may assume that any organism will exhibit its highest virulence under circumstances in which it is multiplying with maximum rapidity, and that a bacterium which under normal conditions is practically non-virulent may in such circumstances show a virulence of quite definite degree.

INCREASE IN VIRULENCE BY NATURAL SELECTION.

Now it will be clear that, in the saprophytic spread of a bacterial parasite, the conditions will tend to encourage the transference of those organisms which possess the greatest power of rapid growth, for such organisms will come to form a considerable proportion of the local bacterial flora of the host, and hence will obtain increased opportunities for transference to other individuals of the host species. In this way natural selection will operate in the direction of the dissemination of the variety of the parasite possessing a maximum power of growth under the prevailing conditions.

It would seem probable, then, that a saprophytic spread of a bacterial parasite would lead naturally to the selective propagation of those forms which would be especially likely, when introduced into the tissues, to multiply within them. It is probable that the bacteria living on a mucous surface are continually being carried into the tissues in small numbers, either by the action of phagocytic cells or in some other way. The combination of the power of rapid multiplication on the surface of the mucous membrane, with the ability to multiply in the tissues when access is gained to them, will render successful invasion extremely probable.

If, then, the parasite forsakes its saprophytic rôle and produces a localised infection of the tissues, it may be regarded as a "passage" strain. Should this strain be transferred to another individual, and so on from host to host, the analogy of experimental passage would suggest that an increase in virulence would result. Natural passage, resulting in such heightened virulence, has been frequently suggested as a possible explanation of the evolution of highly pathogenic strains of bacteria during epidemic outbreaks of disease. It is important, however, to realise that the analogy of experimental passage breaks down at a vital point.

When we wish to exalt the virulence of an organism for a given species, we proceed by transference from animal to animal, always introducing the bacteria into the tissues by mechanical means. Thus we proceed by the selection of strains which are better and better adapted for multiplication in the tissues, that is, more and more virulent in the strict sense of the term; but with the ability of the parasite to infect a new host under natural conditions we are not concerned. This attribute is, as we have seen above, of decisive importance for the production of epidemic disease.

Tissue Invasion.

If we are to accept a series of passages as the natural mode of acquirement of increased virulence, we must believe that the chances of transference, and hence of selective propagation, are increased by tissue invasion. In some cases we find ample reason for believing that such a result will follow. Whenever successful invasion results in the formation of lesions of mucous surfaces the discharges from which naturally pass to the surface of the body and are frequently or continuously emitted into the surrounding medium, it is clear that increased opportunities for passage will occur. In the case of diseases transmitted by biting insects it is still more obvious that successful and generalised invasion of the tissues will be a decisive advantage in gaining transference to a new host. Here, indeed, we are dealing with conditions which approximate closely to those obtaining in experimentnl passage.

It is in many of those infectious diseases in which we have good grounds for believing that transference from host to host occurs via the naso-pharynx that we are faced with the most obvious difficulty. In some cases there are, indeed, local lesions which will readily explain the infection of a fresh host, but in some others the best clinical observation reports the striking absence of local changes. Thus in the case of influenza there seems no doubt of the frequent absence of naso-pharyngeal catarrh, at least, during the height of an epidemic, while careful inquiry has signally failed to bring to light any relation between such catarrhal changes and cerebro-spinal fever.

Though these are real difficulties, they do not seem to be insuperable. The absence of localised catarrhal changes during the height of an influenzal epidemic is not paralleled in those influenza-like outbreaks which occur during inter-epidemic periods, and which, as epidemiologists have shown, tend to be especially numerous in the period preceding an epidemic wave. It would seem possible that it is during these premonitory outbreaks that the preliminary increase in virulence occurs.

RESULTS OF POSTULATED GRADUAL EVOLUTION OF VIRULENCE.

In this way we may perhaps explain the gradual evolution of those virulent and infective organisms which, spreading among a population, cause epidemics of disease. If this explanation be the true one, certain results must follow.

During the preliminary stages the contest between parasite and host will result in minor degrees of tissue invasion, and it is difficult to believe that such a process will not result in the partial immunisation of the host. Again, since transference from host to host will under natural conditions be entirely promiscuous, it will often occur that a given parasite will be transplanted on a host who is already harbouring the same species, though possibly a race of a different degree of virulence. In such a case the newcomer will succeed or fail in establishing itself according as it is better or worse adapted for life under the conditions locally existing. Since it would appear to be a universal rule that competition is most severe between nearly allied species and between varieties of the same species, it is unlikely that the conditions can be so favourable for the rapid multiplication of the parasite as those existing when transference occurs to a host in whom this species is absent.

Clearly, then, the optimum conditions for successful and continued passage will be the close aggregation of a previously non-infected population, and such movement among them as will result in the entrance to the infected locality of large numbers of non-infected persons from outside areas, and the movement to hitherto unaffected districts of persons harbouring the specific parasite. In other words, unusual density of population and an unusual degree of migration will afford ideal conditions for such a process. That these conditions are those which favour the occurrence of epidemics of disease is universally admitted.

The point, then, which it seems necessary to determine is whether a series of natural passages will indeed lead to the evolution of strains of the parasite especially well-equipped for producing disease on the epidemic scale, and whether there is any reason to believe that continued variation along the same lines will result in such modifications as will render it less likely to infect new hosts.

(To be continued.)

ON THE PROGNOSIS OF NERVE INJURIES.

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I. *Introductory.*

IN order to estimate the prognosis of nerve injuries from all points of view it is necessary to have had not only a considerable number of cases, but to have had these under observation for several years. Thus it is not possible to estimate this properly from cases under observation only since the beginning of the war; for recovery of function after nerve injuries and after operations for repair is remote from the date of injury or operation. For this two things peculiar to nerve injuries are responsible. The first is the occurrence of nerve degeneration after all but the most trivial injuries and the necessity of nerve regeneration taking place before conductivity is regained. The second is the degeneration in the muscles supplied by the damaged nerve. This takes place with great rapidity, and is such that the muscle cannot become functional again until it has regenerated, and this restoration cannot begin until the nerve has already regained its conductivity.

Thus, in all cases recovery of the muscle after a nerve injury requires much time. No other kind of case is so difficult to keep under observation until the final result is attained. This is more so with cases in military hospitals, as such patients have their homes widely separated. After discharge from the army these cases can be traced, but the great majority are living at a distance and the reports received of their progress are very often prepared by those unaccustomed to report on such cases, and therefore usually unsatisfactory.

II. *Factors Influencing Recovery.*

More than in other cases nerve injuries are influenced by many factors which have a profound effect on the prognosis, causing at times complete or partial failure, and in other cases delay of the recovery of function. These factors may be classified under the following heads.

A. *Factors Occurring at the Time of the Injury.*

1. *Sepsis* or *asepsis.*—Without doubt one of the causes most unfavourable to nerve regeneration is sepsis in the wound. At one time this was thought a complete bar to recovery, but this is not always the case, as certain cases in which very marked sepsis has been present have given good

recoveries. There appears, however, to be no doubt that it is always an unfavourable factor, and that it is apt to lead to changes in the nerve trunk and its surroundings, resulting in the formation of cicatricial tissue and permanent damage of the nerve trunk. Most of the injuries of the nerves met with during the war have been associated with sepsis and many with large septic lacerated wounds. Even when the wound has been a mere puncture a bit of cloth has often been carried in, causing destructive sepsis. This contrasts with the nerve injuries met with among civilians before the war in which the lesion was, as a rule, caused by a knife or sharp and comparatively clean chisel, or by a bit of glass or the like, making practically incised wounds, which in most cases healed up quickly. Consequently, earlier recovery was usually seen in these cases.

Although sepsis is so unfavourable in prognosis, it does not follow that its absence means an assured recovery of function. Take, for example, cases in which there is no open wound and in which the nerve has been cut by the sharp fragments of a fractured bone, or where the nerve has been ruptured by being subjected to tension. In the large majority of these no spontaneous recovery ever takes place, or at best a very trivial one. Although no sepsis has occurred in these cases other unfavourable factors have caused failure of recovery.

2. *The nature of the damage to the nerve trunk.*—This also has a very important effect on prognosis. The damage may vary between the extremes of slight compression of the nerve trunk caused by a cicatricial band to extensive loss of substance of the nerve trunk. Naturally the former would be regarded more favourably, but between the two extremes are many types of injury varying in prognosis. In general, a compression is regarded as more favourable than a severance. Yet many cases of the latter give results apparently as good as, and in some cases better than, the former, and, generally speaking, the results of the two types are practically the same. Taking the simple fact of the nerve injury, no case of severance should give a better result than one of compression, but many other factors influence simultaneously the result. Should the ends of the severed trunk not lie in close approximation, then the probability of spontaneous reunion is not good. Further, if there is separation to any great extent the gap will not be bridged successfully, and failure of reunion will certainly result.

3. *The surroundings of the damaged nerve trunk.*—The condition of the surroundings is very important. As in shell wounds, much destruction implies cicatrisation in the vicinity of the nerve, so that even although the nerve itself had been in a condition for recovery, yet the development of a mass of densely contracted cicatricial tissue makes any recovery impossible. Sometimes it apparently does not require very much contraction to destroy the function of the nerve, the most notable examples being in the case of the ulnar sulcus and in the aqueduct of Fallopius. In both cases complete and permanent loss of the conductivity of the respective nerves is found from comparatively small amounts of cicatricial tissue.

4. *Amount of trauma.*—A clean cut severing a trunk as a rule gives a better prognosis than when the severance is made as part of a lacerated wound, and when the laceration is extreme the unfavourable effect is extreme. The mode of action of trauma is apart altogether from any loss of substance of the nerve trunk, and still is unfavourable even although the nerve is not actually divided. The harmful effect is due to the reaction in the tissues, in the nerve itself, and in its surroundings, of such a nature that there is more apt to be a development of cicatricial tissue and therefore ultimately compression.

5. *The nerves injured and situation of the injury.*—Certain nerves are more difficult to deal with than others, and in injuries of these prognosis is less favourable. For example, injuries of the facial nerve are difficult to repair. In the first place, injury in the aqueduct is practically impossible to deal with because of the surroundings of bone. There is no difficulty in exposing it here, but the results are unfavourable for the reason stated. Also, if injured in its course in the parotid its repair is very unfavourable because of the salivary gland; while beyond the parotid the tenuity of its branches is against the chances of a favourable reunion. In general, up to a certain size the larger the nerve trunk the more likely is a good result either from the point of view of spontaneous reunion or of reunion by operation. In the former case the ends are not so likely to be separated by an interval so great in proportion to the thickness of the trunk than is the case with nerves of greater tenuity. In the latter case the larger trunks are more easily found and less damage is done to the tissues in the process of finding them.

Then, again, there is the fact that the same nerve will have a better prognosis in certain situations than in others. The best illustration of this is the ulnar nerve, which has its worst prognosis when wounded in its course in the ulnar sulcus unless operative means are adopted to overcome this.

Also, the level at which a nerve is severed has its effects on the result. The most unfavourable event is when the nerves are pulled from the cord, so that the injury is presumably an intrathecal one. The most frequently occurring instance of this is in the brachial plexus, which is sometimes completely torn out by a pull on the abducted arm, the effect being to pull out the nerves from the cord and totally paralyse the arm. The arm then may be amputated at the shoulder, as it would only be a trouble to the patient, and even then sometimes intolerable neuralgia having its origin at the intrathecal lesion continues.

B. *Lapse of Time between Injury and Operation.*

1. *The progressive atrohpy of muscle.*—Wasting of the muscle supplied by the injured nerve is the most serious effect of a nerve lesion, and affects the prognosis very materially. This wasting commences immediately the nerve loses its conductivity. It is unnecessary to go into the exact changes in the muscle, but their effect is to cause the latter to alter almost immediately in its electrical reactions, and when, after a short time it is exposed, it is paler than normal and wasted. For a very long time certainly it retains its responses to galvanic stimuli, although it goes on wasting until its bulk is very greatly reduced.

It is this effect on the muscles which must be taken into account very carefully in giving a prognosis. In the first place recovery of motion will not occur until the muscle is again largely built up and restored to a condition in which its electrical reactions are normal. In the second place the time required to effect this will not be the same in each case, but will vary very widely according to the extent of wasting which has to be made up before recovery exhibits itself to the extent of voluntary movements being possible. Recovery of faradic irritability in the affected muscles is, as a rule, the immediate precursor of recovery of voluntary contractions in the muscle.

Now it is only by a careful study of many cases over long periods that accurate data could be got to formulate a law as to this recovery. In a general way it is recognised that if operation for the reunion of a severed nerve is long postponed any recovery possible will be much longer delayed than if the operation had not been so delayed. The cause of this, as just stated, lies principally in the state into which the muscles have fallen.

2. *Primary and secondary suture.*—In this connexion the question will arise to what extent primary suture has the advantage over secondary suture. The answer is that, other things being equal, it will secure the recovery of the nerve at the earliest possible time so as to stop the degeneration of the muscle as early as possible, and therefore be most advantageous. But other things are not always equal, for in the nerve sections seen in the war the conditions for primary suture were not favourable as a rule, the wound being usually lacerated and infected. In consequence, even although the nerve has been sutured primarily, the result will probably be failure, secondary suture being required. In any case no longer than four months, everything being favourable for further operation, ought to be allowed to elapse after the primary suture without resorting to secondary operation, unless some definite indication has developed to prove that the nerve is reuniting.

Then with regard to the question of when to operate when primary suture has not been done, in order to secure the best result, there may be contingent circumstances influencing the decision, such as an open wound. In that case the wound must first be induced to heal, as the prognosis of an operation in such circumstances would not be good. Should the parts be healed sufficiently long and only the question of time to be considered, then between two and three months after the nerve section appears to give a prognosis of the earliest possible recovery. Under such circumstances the best result is a recovery of voluntary movements in about three or four months from the date of operation.

When further delay has taken place before operation then the waiting time after the operation increases at a greater rate. Thus the examination of a number of cases showed that cases operated upon within three months gave a commencing recovery in three and a half to four months, but if five or six months elapsed before operation then seven or eight months elapsed before any improvement in the muscles occurred. These dates refer entirely to the recovery in the muscles. The date of recovery of sensation is not dependent on these intervals of time.

3. *Operation after long intervals.*—When many months have been allowed to elapse before operation then the date of recovery of the muscles is so remote and so gradual that it is very difficult to say exactly when it has commenced to exhibit itself. These cases often pass out of observation and are seen only after a long time, when it is found that recovery has taken place.

FIG. 1.—Condition in Case 1 before operation and 18 months after division of ulnar nerve above wrist. (Phil. Trans., B, 1897.)

CASE 1.—The patient was a woman aged 29. The ulnar nerve was divided above the wrist 18 months previously. At the operation the nerve was found completely divided and the ends separated. Before the operation the muscles in the hand supplied by the ulnar had lost all their voluntary power: their faradic irritability was lost and their responses to the galvanic current were minimal. The muscles were wasted and the skin glossy; the appearance of the hypothenar eminence is shown in Fig. 1.

The operation was performed in January, 1897, 18 months after the section of the nerve. Sensation in the insensitive area returned in five days, indicating the recovery of the conductivity of the nerve, but no appearance of recovery of the muscles was exhibited and the patient passed out of view and the case was published at this stage. She was seen again five years and four months after the operation, and it was found that a perfect recovery of the muscles and of the movements had occurred in the interval. Fig. 2 shows the reproduction of the hypothenar eminence which had taken place. The slight appearance of hyperextension in the little and ring fingers was the consequence of the long-continued ulnar attitude, but did not prevent the normal use of these fingers.

FIG. 2.—Condition in Case 1 five years after operation. (Chipault's, Chirurgie Nerveuse, vol. ii., Paris, 1903.)

Another case may be quoted in illustration of this matter. It was a case of rupture of the fifth and sixth cervical nerves in the brachial plexus.[1]

CASE 2.—The age of the patient at the operation was 14 years, and the accident occurred at birth. The typical paralysis of this condition was present with atrophy of the affected muscles. At the operation the fifth and sixth trunks were found to have been completely divided and united by a scar. On stimulation only a few of the fibres of the deltoid and biceps contracted without any movement resulting. The cicatrix was excised and the proximal two trunks sutured to the three distal branches—namely, suprascapular nerve, branch to the posterior and branch to the outer cord of the plexus. At five months no improvement had occurred in the movements, although the electrical reaction seemed improved. About two years after the operation, however, the movements had greatly improved.[2] The forearm could then be flexed voluntarily through a range of 60°, and voluntary abduction of the arm was possible through a range of 45°. While these movements were being made the biceps and deltoid could be felt to contract. Also the atrophy of the biceps and deltoid had greatly disappeared. This was the state of matters on the last occasion on which the patient was seen. He wrote subsequently stating that his arm was "all right now," meaning, probably, that further improvement had taken place. No further occasion to examine him occurred, and it has since not been possible to trace him.

It is thus seen that even after long periods there is a possibility still of obtaining good results. It also seems to be the case that although delay in operating means an increasingly longer period to wait for the recovery, after longer delay before operation, the recovery takes place in a more uniform interval of time. Thus for increasing intervals before operation the waiting time after operation increases up to a point and then ceases to increase with further increase of the interval before operation.

C. *Factors Occurring at the Operation.*

1. *Asepsis or sepsis.*—Asepsis is one of the most important conditions in operations for the repair of damaged nerves. A standard of technique which may give passable results in certain other branches of operative surgery will give poor results in nerve surgery. The importance of this as regards the prognosis is not always kept in view. The special reason for this high standard of aseptic technique is that we are dealing with the regeneration of one of the highest types of tissue cells which, as far as their regenerative capacity is concerned, are inferior to connective-tissue cells. The latter, if present in abnormal quantity, are likely to prevent the development of nerve tissue simply because they regenerate more easily than nerve tissue. The consequence is that compression will ultimately develop from the new-formed connective tissue which is fatal to the functional development of any new nerve fibres which have been formed.

It is not only a question of healing by first intention. Certain wounds may heal by first intention, although a more considerable reaction has occurred in them than in the case of other wounds in which the state of sterility has been more successfully guarded. Thus it is that the surgeon whose technique has nearest approach to perfection will find his results better than where the technique is not quite so good, although in both cases all the wounds may have healed "by first intention." It is not meant by this to maintain that no result is possible should a wound even suppurate, for a good result may take place although sepsis has occurred, but in general the results will be better the less the reaction induced in the wound, and this reaction can be reduced to a minimum by technique.

2. *Amount of trauma caused by operation.*—Very important is the amount of force necessary at the operation before the scar is removed from the nerve and its surroundings so as to leave the nerve free or before the ends of the divided nerve are freed from scar and united by suture. Usually the operation, carried through with the greatest gentleness, will give a quicker result than one where force has been necessary. The rule is always to avoid force or coarseness of manipulation if the object can be attained without. This rule applies to any department of operative surgery, but failure to observe it is particularly destructive of good results in nerve surgery. When the nerve ends are embedded in dense scar it is not always possible to get the nerve trunks clear without considerable force. Also, in the case of

[1] Brit. Med. Jour., 1903, Feb. 7th. [2] Ibid., 1904, Oct. 22nd.

a lesion of the ulnar nerve in the arm when the ends cannot be united, without transferring the nerve out of the sulcus to the front of the epicondyle, then more trauma is inflicted. In such cases the prognosis is not so good as where minimal force and manipulation are used.

3. *Coaptation of the nerve ends.*—Another important point is the possibility of getting the ends to meet. If they do not meet, or only do so with tension on the nerve, then the outlook is not a good one. Sometimes if the ends are separated only by a short interval conductivity is restored, but sometimes it is not. Nevertheless, the failure to get the ends quite to meet is much less serious than infection of the wound would be. When the ends do not meet pulling on the nerve trunk often succeeds in getting them together, but the fibres of the nerve may be ruptured, and in that case will require to regenerate causing a further postponement of the early signs of reunion. Excising a segment of a bone so as to shorten the limb and bring the nerve ends into contact requires so much manipulation that the prognosis is unfavourable.

4. *The nature of the suture.*—The suture used has some importance. When sutures which cause irritation have been used, such a formation of connective tissue may be caused at the seat of suture as to strangle any young nerve fibres and prevent restoration of conductivity. The suture must be carefully chosen in view of its capacity either to be encapsuled by the tissue or to be absorbed and to cause the least irritation in either process. Also those cases will have the best prognosis in which the smallest amount of foreign material has been left at the seat of section either to be encapsuled or absorbed. This applies to Cargile membrane or any dead material employed to wrap round the seat of junction, also to thick sutures or many sutures at one junction, all of which are objectionable.

5. *The surroundings in which the nerve is left.*—Lastly, the prognosis is poor in all cases in which after the operation the sutured or liberated nerve has unavoidably been left in a bed of scar or in a bony canal or furrow. In the former case the scar will contract and prevent the conductivity of the nerve from being restored or destroy it after it has been restored. In the latter case the scar or neuroma which is formed at the damaged segment of the nerve, because of the unyielding boundaries, will prevent conductivity by compression.

D. *Factors occurring after the Operation.*

1. *Contraction of antagonist muscle or group of muscles.*—After a satisfactory operation a case may be spoiled by the want of attention to the antagonist of the paralysed muscle or group of muscles. The paralysed muscles may recover their irritability and yet be incapable of carrying on their function because they are stretched and cannot overcome the contractured muscles. This can be prevented by appropriate fixation or even by appropriate passive movements until recovery of the paralysed muscle.

These contractures appear to be more apt to occur in injuries of certain nerves, but again they are also found in certain cases and not in other cases of injury of the same nerve. The difference appears not always to lie in the amount of attention given to the limb throughout the period of recovery. Thus, although no correcting splint has been applied, excellent recoveries may result. In some cases most favourable results are obtained without the slightest attention to after-treatment.

For example, a case of musculo-spiral paralysis[2] after operation gave a complete recovery, although the patient did not permit any after-treatment whatever. A fracture of the humerus was caused by the patient being run over by a police van from which he had just made his escape by tearing up the floor and dropping on to the street. Two days after operation for nerve suture he left the hospital and for about ten days was practically continuously under the influence of drink. He then called at the infirmary and had the stitches removed from the wound, which had healed perfectly by first intention. No more was heard of him till five months after operation when he called again and showed a perfect result and stated that the recovery had become apparent to him 9½ weeks after the operation. In this case the operation was done as soon as the nerve was in the best condition for operation, so that a minimum time was allowed for the development of contracture.

As a rule, contracture will be more likely to affect the prognosis when recovery is longer delayed, and if it is allowed to develop to a marked degree it will seriously hinder the recovery. Thus when contracture is well developed it often happens that although there appears to be no recovery of the paralysed group, that group is found on electrical examination to give normal reactions, but the functional recovery has been made impossible by the overstretching due to the contracture of the antagonist group. This very often is shown in cases of foot-drop, where not only the paralysis of the extensors, but also gravity combine to keep the foot in a position of flexion and thus the formation of contracture of the flexor group is encouraged. Unless care is taken this contracture will prevent a functional recovery of the muscles. The contracture must either be prevented from forming or dealt with should it already have formed.

CASE 3.—Figs. 3 and 4 show a foot in flexion and extension, and in this case there was foot-drop due to an injury of the external popliteal nerve. It was dealt with four months after injury, at which time the extensor group still showed galvanic reactions but no faradic responses. The patient lived at a distance from the hospital and reported himself after the operation very seldom. It was found in about three months that contracture of the gastrocnemius had occurred. The tendo Achillis was then divided for the temporary relief of the contracture. The patient did not report himself again for two years, when it was found that the extensor group had recovered perfectly, and the tendo Achillis not having reunited the foot was drawn into a position of calcaneus. The tendo Achillis was then repaired. The patient then returned to his work as a miner. It is now 2½ years subsequent to the repair of the tendon, and a slight calcaneus position still remains. Had the patient been more regular in his visits to the hospital the tendo Achillis could have been repaired as soon as the extensor group had recovered, and thus the development of the calcaneus prevented. This method is advisable only when the patient cannot be attended to regularly or induced to wear a correcting apparatus pending the recovery of the muscle.

FIG. 3. FIG. 4.

Case 3.—Recovery of extensor muscles after injury of external popliteal nerve followed by contraction of gastrocnemius dealt with by section of tendo Achillis.

2. *Cicatricial contraction.*—In certain cases it is learned on questioning the patient that sensation was present after the receipt of the wound, and that the anæsthesia developed subsequently at no great time after the injury. Then, in all probability, the nerve will be found not divided, but compressed in cicatrix. The loss of sensation has been due to cicatricial contraction and comes on gradually. The same is sometimes observed after operation, a very early return of sensation gradually disappearing a little later and no improvement again showing itself. This is to be expected, as already noted, when the nerve at the operation is left in dense surroundings or in pre-existing cicatrix.

3. *Overwork on recovery.*—Muscles which have just recovered their function are incapable of doing much work, any attempt by the patient to make them work will result in fatigue which will hinder further recovery. The paralysis then recurs and remains until the muscle from the enforced rest again becomes functional. This may not mean that the man is overworking his muscles by a return to work. The same thing can occur by any ordinary use of the muscles. It sometimes happens that a man finds the recovering hand strong enough to grasp the handle bar of a cycle and commences to use this means of locomotion. This is frequently followed by a recurrence of the paralysis. It is well to advise patients as to the use of the hand in the early stages

[2] Chipault's Chirurgie Nerveuse, ii., 855, Case 33.

of recovery. Active movements should be strictly limited until the muscles are sufficiently strong.

III. *Results.*

In 1908 I published a series of all the nerves operated on by me to that date. There were 35 in all, but ten were too recent to give final results. Some of the latter were subsequently traced and found to have given satisfactory results. There remains a series of 25 observed for a sufficiently long time, and of which the main details can be seen by reference to the work in which they were published.[4] A certain number of these cases were found at the operation to be cases of complete severance and the remainder to be cases of compression.

For the purpose of classification the results were divided into three categories, namely: Complete Successes, i.e., where sensation and motion were restored so as to give restoration of normal function; Partial Successes, i.e., where the results left something wanting, although the recovery was sufficient to give distinct improvement; and Failures, i.e., where no useful recovery resulted.

Tabular Statement of Results in 25 Fully Observed Cases.

Nerve or nerves affected.	Complete severance.				Compression.				Total.			
	Number.	Complete success.	Partial success.	Failure.	Number.	Complete success.	Partial success.	Failure.	Number.	Complete success.	Partial success.	Failure.
Brachial plexus	1	1	...	...	2	1	1	...	3	2	1	...
Median	3	3	...	...	...	...	...	...	3	3	...	...
Ulnar	6	4	2	...	1	1	...	...	7	5	2	...
Musculo-spiral	3	2	1	...	3	3	...	...		5	1	...
Radial	1	1	...	...	...	...	...	...	1	1	...	...
Median and ulnar	1	...	1	...	1	...	1	...		...	2	...
Median, ulnar, and musculo-spiral	...	...	...	...	1	...	1	...	1	...	1	...
External popliteal	...	...	...	...	1	1	...	...	1	1	...	...
Facial...	...	...	...	...	1	1	...	...	1	1	...	...
Total results	15	11	4	...	10	7	3	...	25	18	7	...
Percentage ...	..	73·3	26·6	...	...	70	30	...	...	72	28	...

The accompanying table shows these results as regards the nerve or nerves affected, the nature of the lesion, viz., complete division or compression; the whole of the cases considered together and the nature of the results. It is seen that there are no failures, and that the results are not greatly different as between complete division and compression.

[4] Chipault's Chirurgie Nerveuse, ii.

EYE-COLOUR AND THE ABNORMAL PALATE IN NEUROSES AND PSYCHOSES.

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THE influence of the individual factor in the development of neuroses and psychoses is of importance in relation to their prevention. The lack of reliable data for a detection or estimation of the factor, which has also social and economic aspects, becomes evident in examining soldiers afflicted by these disorders. The conviction grows that the part played by nature, as distinct from that of nurture, in the development of such disorders cannot yet be described safely as more than a susceptibility (predisposition).

The view, however, that definite indications of nature's influence are demonstrable before disorder reveals it, is held widely. Physical stigmata are pointed out, and the importance of stigmata cannot be overrated if their significance be proved and they provide a means of estimating the degree of susceptibility. But their significance cannot be taken as proved, and no claim has been made for their mensurative use. Yet "instability," "neurotic constitution," and "degeneration" continue to figure freely in up-to-date textbooks without explanation of their meaning, and stigmata to be described under symptomatology as indicative of—these terms. It would appear that the first two of the terms are meant to be synonymous with susceptibility.

On this assumption, advantage was taken of the opportunity afforded by the examination of a long series of discharged soldiers in whom susceptibility to neuroses and psychoses had been demonstrated only by its results, to inquire into accepted and unaccepted stigmata. The accompanying notes on eye-colour and the abnormal palate represent the results of observations forming part of this inquiry.

Eye-colour.

The observations upon eye-colour were made to test a prevailing impression that the sufferers from (war) neuroses and psychoses are mostly dark-eyed, and after these considerations:—

1. Previously to 1914 at least, it was believed that nations varied in susceptibility to neuroses and psychoses. The susceptibility of the British was believed to be low, that of certain continental nations to be high.

2. The dominant eye-colour of these continental nations is dark; that of the British is believed to be light.

3. The impression that dark eye-colour predominates amongst the British (war) sufferers from neuroses and psychoses, coupled with the impressions contained in (1) and (2), suggested that the inquiry might prove interesting and possibly productive.[1]

A preliminary search was made for records of the relative frequency of the different eye-colours amongst our population but not with satisfactory result owing to the variation in standard of colour and in methods of record amongst the observers (Beddoes, Tocher, Ripley). Nevertheless, the inquiry was pursued in hope that reliable figures would be produced by scientific observers in our great armies. The method of observation adopted was founded on that employed by Major C. C. Hurst, F.L.S., in the Burbage inquiry into Mendelian inheritance in man,[2] and based upon the anatomical distribution of the eye pigment.

"In the albino pigment is absent; in the various shades of blue eyes the pigment cells are confined to the posterior surface of the iris, whereas in grey, brown, and black eyes pigment is found also in the cells of the stroma and in those of the endothelium on the front of the iris."[3]

In effect the method divides eyes into two classes: first, those with pigment in the posterior layer of the iris only; secondly, those with brown pigment *also* in the anterior layer of the iris, in the stroma, or in both. Hurst named the first class *simplex*, the second *duplex*, eyes. *Simplex* eyes are therefore always some shade of pure blue or pure "grey."[4] *Duplex* eyes comprise all other colours—black, brown, hazel, yellow, green, impure grey, and intermediate shades. Neither confusion nor hesitation need occur if the question of colour is steadily excluded from the simple decision whether (brown) pigment is present anteriorly in the iris or not. The method—easily learnt and rapidly carried out by careful inspection laterally in a good light—is facilitated by Hurst's further subdivision of *duplex* eyes into *self*, *ring*, and *spotted*, according to the pattern of distribution of the anteriorly placed pigment.

The observations were made in three series of consecutive cases (Table I.):—

TABLE I.

—	Series A.			Series B.			Series C.	Total.
	1st 100	2nd 100	3rd 100	1st 100	2nd 100	3rd 100	100 cases	700 cases
Simplex	33	34	27	37	33	31	35	230 ... 32·85%
Duplex	67	68	73	63	67	69	65	470 ... 67·15%

Totals { Simplex, Series A, 94, 31·33% ... Series B, 101, 33·66%
Duplex, ,, 206, 68·67% ... ,, 199, 66·34%

[1] An eminent physician assures me that history supports a belief that the blue-eyed races have proved their superiority over the brown-eyed and points to a number of contemporary illustrations of the fact that great leaders are frequently blue-eyed, even among the brown-eyed nations. On the other hand, there is the epigrammatic French view (A de Candolle) "Pigmentation is an index of force."

[2] Eugenics Review, April, 1912. [3] Gray's Anatomy, 1913, p. 942.

[4] That is to say "grey," in the opinion of some. It is the absence of pigment anteriorly that matters rather than the observer's conceptions of colour.

In the absence of statistics as to the relative frequency of simplex and duplex eyes in our population, these figures cannot be advanced to do more than support the prevailing impression that the duplex eye is more frequent than the simplex eye amongst our (war) sufferers from neuroses and psychoses.

Palate.

The abnormal palate has a strong position in medical opinion as a stigma of "degeneration," which, we are told, is capable of manifesting itself in "nervous instability."[5] Observations on the palate were therefore introduced into the inquiry at the suggestion of a colleague. An attempt was made to follow Peterson's classification of abnormal palates, but this was discarded as too complicated and confusing as soon as an ocular conception of the normal palate had been acquired. The method adopted finally took narrowness as a characteristic and abandoned height, which experience suggested to be more apparent than real, and included the shape of the arch not only as a characteristic, but also as an indication of the intensity of the abnormality, as follows:

1st Norman (N^1) = wide round arch = normal palate.
2nd ,, (N^2) = narrow ,, ,, = abnormal (1st degree).
1st Gothic (G^1) = ,, oval ,, = ,, (2nd ,,).
2nd ,, (G^2) = ,, pointed ,, = ,, (3rd ,,).

This division, like Peterson's, is arbitrary, but has the advantage of simplicity. No data were discovered in medical literature for an anatomical division; the normal width of the palate relatively to the dimensions of the facial skeleton does not appear to have been ascertained. Faute de mieux the classification seemed to serve for as accurate observation as is possible at present to the trained eye.

The palates were observed in two series.

TABLE II.

Series A (as above). 163 cases only.

N^1	N^2	G^1	G^2
28 ... 17·17%	47 ... 28·84%	69 ... 42·34%	19 ... 11·65%

The striking feature of the result in Table II. is the low returns for the "normal" palate and for the extreme degree of abnormality, and it was thought worth while to ascertain how simplex and duplex eyes were distributed to the varieties of palates in the series. (Table III.)

TABLE III.

Series A (163 cases only).

Eyes.	Palates. N^1	N^2	G^1	G^2	Total (eyes).
	%	%	%	%	%
Simplex	9 ... 32·14	16 ... 34·05	18 ... 26·05	4 ... 21·05	47 ... 28·83
Duplex	19 ... 67·86	31 ... 65·95	51 ... 73·95	15 ... 78·95	116 ... 71·17
Series C (100 cases).					
Simplex	10 ... 47·6	15 ... 48·7	9 ... 23·7	1 ... 10·0	35 ... 35·6
Duplex	11 ... 52·4	16 ... 51·3	29 ... 76·3	9 ... 90·0	65 ... 65·0
Above Cases Combined (263 cases).					
Simplex	38·77	39·75	25·23	17·25	31·18
Duplex	61·23	60·25	74·77	82·75	68·82

The leading feature of the result in Series A suggested a further series and Series C was undertaken only to ascertain if that feature was maintained, while the results of the combination of Series A (163 cases) with Series C (100 cases) are also tabulated.

It will be seen that while the percentages of the least abnormal (N^2) show small variation from those of the normal (N^1), those of the abnormal classes (N^2, G^1, G^2) show a progressive increase of the percentage of duplex eyes as the degree of abnormality of the palate increases. The difference between the percentages of duplex eyes in N^1 and in G^1 and G^2 is in fact as definite as the difference in palate formation. The similarity of the percentages of N^1 and N^2 may be explained, plausibly at least, by the fact that the departure from the normal in N^2 consisted of narrowness *without* change in arch formation.

The doubt arises whether there has not been faulty classification—that many of N^2 should have been classed in N^1. This doubt must beset such classifications until the width of the palate relatively to the dimensions of the facial skeleton is determined. This consideration, however, does not affect the fact that the figures show a by no means negligible increase of the percentage of duplex eyes in G^1 and in G^2 (the definitely abnormal palates) over the percentage of duplex eyes in N^1 (the normal palates).

Conclusions.

Definite conclusions are prevented by the facts already noted, but the following suggestions seem justifiable:—

1. That in individuals who are susceptible to the neuroses and psychoses *duplex* eyes are more than twice as common as *simplex* eyes.

2. That in the same class of individuals the *narrow and abnormally arched* palate (G^1 and G^2) is present in about 52 per cent. of cases.

3. That in the same class, again, the proportion of duplex eyes to simplex eyes is markedly increased in those cases with narrow *and* abnormally arched palates (G^1 and G^2) and the increase tends to intensify along with the intensification of the palatal abnormality.

Even if the proportion of simplex to duplex eyes given does not vary from the general proportion in our population and even if the abnormal palate is indeed a British characteristic, whatever its cause, the interest of the third conclusion remains sufficiently suggestive for further investigation on a larger and more complete scale.

Degeneration.

A word must be added on the subject of the abnormal palate as a stigma of "degeneration." Bearing in mind the view explaining the abnormality by the baneful influence of adenoids on intranasal air pressure, their presence was looked for whenever recognised characteristics of their influence (adenoid facies) were detected in Series C.[6] This happened in class G^2 only, but in all ten cases; and adenoids were found, or a history of operation, in six of these. By way of control after each case the next case classed as G^1 was examined for adenoids, but without result.

It would appear that the reply of the "degeneration" theorist to the air pressure theorist has been to sweep in adenoids as a stigma.[7] I do not venture to decide how far my figures may support one side or the other. The publication of these notes, however, is certainly not prompted by a desire to strengthen the position of the abnormal palate in the fabric of "degeneration," or to nail up the duplex eye as a new stigma; or yet to justify the tendency to use "degeneracy" and "neurotic constitution" as synonyms.

Etymologically, "degeneration" signifies downward departure from the qualities of the race—a definition offering too welcome latitude to indolent judgment and inviting us to stigmatise many whose accomplishments prove us wrong. If "degeneration" and "neurotic constitution" are to be retained in medical terminology, then surely clear thinking demands that they should be raised to the level of scientific exactitudes.

I venture to repeat that susceptibility to neuroses and psychoses is the most our present knowledge permits us to premise. So far as the observations, of which those recorded here formed part, have gone, they create a belief that reliable data for the estimation of this susceptibility, if attainable, may be reached more readily through psychopathology than through somatic pathology.

Little that is illuminating on this subject has so far appeared to my knowledge in the flood of medical literature of the war; while Freud, Adler, and Jung similarly fail us, although some of the latter's abstract reasoning in his "Conception of the Unconscious" is suggestive. It is not sufficient to speak of symptoms and pride ourselves we have proved "neurotic tendencies"[8] or "instability" without having any conception of their fundamental cause. The way of enlightenment may perhaps lie through further investigation of the complicated psychic processes of the child, of which, as Jung confesses, our knowledge now is meagre.

[5] Cf. Psychological Medicine, by Maurice Craig, 1917 edn., pp. 27, 28.

[6] Previously to observing Series C I had the advantage of a demonstration by Dr. Harry Campbell of his well-known views on the causation and significance of the abnormal palate. It will be recalled that he is inclined to regard it as a British characteristic, denying its connexion with degeneracy.

[7] Cf. Maurice Craig, op. cit., p. 350: "the naso-pharyngeal passages are filled with adenoids."

[8] Cf. War Neuroses, MacCurdy, 1918, p. 33.

A CASE OF

PITUITARY TUMOUR TREATED BY OPERATION.

BY H. LAWSON WHALE, M.D. CANTAB., F.R.C.S. ENG.,
LARYNGOLOGIST TO THE HAMPSTEAD GENERAL AND TO THE LONDON TEMPERANCE HOSPITALS.

THE following case of pituitary tumour is, I think, worthy of record. Sellar decompression and removal of endotheliomatous tissue from the anterior lobe of the gland was followed by great improvement in the pressure symptoms.

Condition of Patient.

Mrs. ——, aged 29 years, consulted Dr. C. O. Hawthorne in September, 1917. The chief points in her condition were as follows. Sight failing for six months. Sleepy and easily fatigued. Weight, if anything, gaining. No digestive disturbances. Married for four years. Amenorrhœa for four years. Patient was, for her age, a heavy, lethargic woman. Spoke in a slow monotone and walked slowly. Wassermann negative. On one occasion only was sugar found in the urine. Optic discs white. Vision: R., 6/24; L., 6/60. Visual fields, roughly tested, showed deficiency in temporal halves nearly to fixation point (see chart). The patient was seen by Mr. E. D. D. Davis.

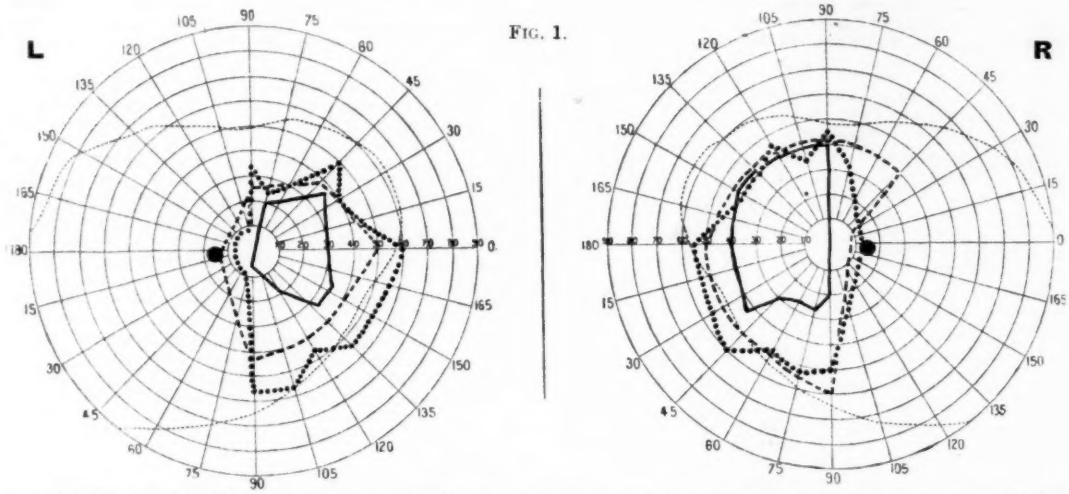
In November, 1917, patient was under observation in Hampstead General Hospital. Vision:—R., 6/18; two letters, 6/12. L., counted fingers at three feet. Temperature never above normal and morning record often 97° F. Blood showed leucopenia (2500 white cells). Occasional vomiting sometimes occurring in the morning before any food had been taken. In December, vision: R., 6/18; L., fingers at two feet. Thought her sight was better than on admission. The patient was seen by Mr. W. G. Howarth. In June, 1918, after having been to Yorkshire, thought this had resulted in a wonderful effect on general health and eyesight. Looked much more alert and had largely lost her former lethargic expression. Vision: R., 6/9; L., perception of light only. On Feb. 22nd, 1919, she had been seen as an out-patient on two or three occasions, and lately condition had been less satisfactory. Vision: R., 6/24; L., perception of light only. Headaches began six months ago and were now worse, especially in the mornings.

On March 4th I was asked to see patient. Headache was now acute and nearly constant in the vertex or the occiput. Occasionally there was a moderate degree of proptosis (left), which at other times was absent; divergent squint (left). Questioned as to previous diplopia, patient stated that this had existed two years ago, but only lasted three months, when sight (left) began to fail. Lethargy was obvious. Her sugar tolerance had been tested. She took up to 5 oz. in eight hours without any appearing in the urine. Nose and accessory sinuses normal. Skiagram, taken by Mr. H. Wigg, showed a large pituitary fossa (Fig. 2). Her husband was decisive in preferring the risks of an operation to a continuance or aggravation of her condition. A nasal douche, and urotropin 20 gr. t.d.s. were prescribed for four days as a preliminary to operation.

FIG. 2.

The pituitary fossa is enlarged both vertically and in the sagittal plane. The anterior clinoids are deformed and thickened; the posterior clinoids are atrophied, thickened and rounded.

FIG. 1.



Perimetric charts.—Neither before nor subsequent to operation was there any record of vision in the temporal fields, excepting from March 22nd to March 29th, between the lines 90 and 45 in the upper part of the right side. But the improvement in the nasal fields is striking. Continuous black line ——— Sept. 18th, 1917. Interrupted black line – – – – March 22nd, 1919. Dotted line ····· March 29th, 1919. Immediately previous to the operation the fields were not charted, because on the left side she had only perception of light.

Operation.

Operation was performed on March 8th, Dr. B. W. Cohen assisting. Preliminary laryngotomy had been intended, but the available tube was unsuitable. As the patient was breathing badly under the anæsthetic an airway had to be provided without loss of time. Rather than delay until a tracheotomy tube could be boiled and inserted the available tube was inserted through the thyro-hyoid membrane; through this tube Dr. D. H. Fraser gave chloroform, the pharynx being shut off by sponges. The tube was withdrawn eight hours later. The left middle turbinate was now removed.

A modified Mouré's incision was made on the left side. The vertical limb of this took the ordinary course down along the junction of nose and cheek. The horizontal limb passed outwards in the skin only as far as just beyond the punctum lacrymale. Thence it was carried through the lower tarsal plate and along the deepest part of the conjunctival fornix for ¾ in. The bone, now removed with saw, chisel, and bone forceps, was bounded as follows: mesially, by the pyriform opening and the inter-nasal suture; above, by a horizontal line cutting off a bare ⅛ in. of the nasal process of the frontal bone; laterally and below, by a line from the centre of the infra-orbital margin to the middle of the pyriform opening (this line just spared the infra-orbital vessel and nerve); laterally and above, by a curved line skirting the infra-orbital margin.

The naso-antral party wall was now freely cut away; the nasal duct was not seen or recognised. The ethmoidal gallery was nibbled away and the sphenoidal cell identified. Of this the whole outer wall was cut away. At this stage I had been prepared to sever the bony septum from its attachments above and to dislocate it temporarily to the right for better access to both sphenoidal cells; this manœuvre, however, proved unnecessary. The whole cavity was carefully cleared of minute fragments of bone and mucosa and swabbed, and fresh adrenalin applied for five minutes. The sellar floor was now to a large extent removed piecemeal by the use of one of the curved gouges belonging to a West's intra-nasal dacryocystotomy set. The bone was seemingly very thin. No force at all was required.

What appeared to be a collapsed cyst, which when intact would have been about the size of a small cherry, presented. It was removed; a very small amount of clear fluid escaped; no pus was anywhere encountered. All loose tissue was removed from the cavity. A long malleable probe was now used to explore the depths. As far as could be discovered by this probe and by vision this cavity had now been emptied. It was bounded by intact dura above and on both sides; the dura pulsated slightly. The gentlest exploration with the probe produced an alarming intermittence of the pulse, and at this moment Dr. Fraser gave a hypodermic dose of pituitrin. The incisions were closed, except for the lowest ½ in. of the lateral nasal incision, through which a fine tube was inserted into the antrum. A single strip of ribbon gauze was passed up the nose into the pituitary fossa.

FIG. 3.

Photographed on May 5th, two months after the operation, and two weeks after the patient had returned home to the normal performance of all her household duties. The visible scar of the incision, already small, may later be entirely obliterated by excision.

After-treatment.—Urotropin was continued for a week. The antral tube, changed daily, was discontinued after five days. The nasal wick was continued for ten days. Once daily the cavities were gently irrigated with hydrarg. biniod., 1 in 2000; on the ninth day, when it was judged that a protective granulation barrier would have formed, this lotion was preceded by hydrogen peroxide. After two weeks the only local treatment was an alkaline wash twice a day.

Abstract of Dr. Wyatt Wingrave's report.—The cells composing the fragments resemble those of the pituitary body individually, but are not grouped like them. The cells seen are grouped irregularly, and so are strongly suggestive of a neoplasm. Only in one place are the cells arranged in typical columns. Seen under 1/12 oil-immersion lens, certain intracellular copper-coloured granules show that the endothelium of the cell columns is neoplastic. Examples of hetero-mitosis, such as are usually seen in malignant epithelioma, are extremely scarce; moreover, epithelioma is excluded by the absence of paranuclei. The absence of granulation tissue excludes sphenoidal cell disease. The section resembles the anterior lobe of the pituitary gland, but with an endothelioma.

After-history.

The temperature was normal or subnormal, and pulse averaging 80-90 after the twelfth day. The external strabismus persisted. Epiphora was present, but only intermittent and of slight degree; presumably the upper part of the nasal duct is open into the naso-antral cavity. There has been no conjunctival chemosis or infra-orbital œdema. The general condition was brighter, more alert. For five days patient complained of a trickling of fluid (? cerebro-spinal) into her mouth, but it was not possible to obtain any of this for examination. For two days she vomited about once hourly clear greenish fluid; the vomiting continued, with gradually abating frequency, for nearly a week. This duration made it improbable that the anæsthetic was the cause. Possibly the urotropin, which was continued for a week after operation, was responsible; but vomiting was a feature of her condition long before her operation. The gastric irritability prevented her from retaining sugar when given by the mouth to test her sugar tolerance. And even when spontaneous vomiting had ceased she would not retain sugar, even when heavily flavoured. She was allowed out of bed on the eighteenth day.

Headache has been entirely absent since the operation. The only sensation she complained of was hyperæsthesia of the scalp, which disappeared with the removal of the bandage. Patient had anosmia. (N.B.—The right nasal cavities were not touched at operation.)

Vision.

Rough tests made during the days following operation showed that with the temporal side of her left retina (nasal side of field) she could see as follows: fingers on the first day; type ¼ in. high at 2½ ft. on the third day; type ⅛ in. high at the same distance on the fifth day.

On March 22nd (fourteenth day) Dr. Hawthorne reported as follows:—"Pupil reactions: R., normal; L., sluggish. No change in either disc. No post-operative œdema of discs. Vision: R., 6/12; L., 6/36. Test type read R., J. 1 slowly, J. 2 easily; L., J. 14."

Visual fields.—See charts; for convenience of comparison with the former record, the perimetric tracing already given under notes of Sept. 18th, 1917, is reproduced as a black line. The extent of the fields during the period preceding the decompression operation was not charted, because there was on the left no field to chart; at this time the raised intracranial pressure was shown by the headache also. (See Dr. Hawthorne's notes of June, 1918, and Feb. 22nd, 1919, when the vision on the left side is recorded as only perception of light.) The anosmia persisted.

On March 29th (twenty-first day) the sense of smell had been present during the last 48 hours. She was much brighter. No change in optic discs or in divergent squint. There was no return of the diplopia from which she had suffered in 1917, before her sight failed. Vision:—R., 6/9. L., 6/36; one letter 6/24. Type read: R., J. 1 slowly, J. 2 easily; L., J. 10.

Visual fields.—See charts on which the earlier tracings have been superimposed.

Dr. Hawthorne's notes.—April 2nd.—Blood pressure: systolic, 100 mm.; diastolic, 80 mm. Visual fields not materially affected. Discs as before. Vision: L., 6/24, three letters. Type: R., J. 1; L., J. 10. April 3rd.—Yesterday patient was out on the verandah; to-day she has what she describes as a bilious attack. The inner canthus and the region just below it are œdematous and a little red, for the first time (? dacryocystitis). T., 100·8° F. April 15th.—Pyrexia (April 3rd) subsided next day. Œdema at inner canthus has subsided. Sugar tolerance tested as follows: April 13th, 7 P.M., sugar ℥iii. given. Urine tested at 11 P.M., and again at 8 A.M. on April 14th. No glycosuria. April 16th.—Discs, I.S.Q. Vision: R., 6/9; L., 6/18. Type: R., J. 1; L., J. 6. Perimeter (vide charts). To discard eye-shield or dressings. April 21st.—No more photophobia. June 4th.—Her husband writes: "..... her health is excellent. She is a totally different woman, and improves each day.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THREE UNCOMMON ABDOMINAL CASES ILLUSTRATING SOME PITFALLS.

BY NORMAN C. LAKE, M.D., M.S.LOND., F.R.C.S.ENG., MAJOR, R.A.M.C.;
AND
H. K. KEVIN, L.R.C.P. & S. IREL., CAPTAIN, R.A.M.C.

THE following cases occurred within a short period at the Prisoners of War Hospital, Oswestry. They are recorded because of their rarity, and also indicate some pitfalls.

Traumatic Diaphragmatic Hernia.

CASE 1.—German prisoner of war, aged 20. Wounded Sept. 27th, 1918; admitted to this hospital Oct. 5th, 1918, with gunshot wound of left side of chest. Small entry mark in fourth interspace about 3 inches from mid-line; bullet felt subcutaneously just mesial to inferior angle of scapula. His field-card recorded hæmoptysis for a few days in France. Upon admission the entry wound was a mere scar; no hæmoptysis or pathological sign in the chest. On Dec. 11th he was up and due for discharge, but returned to bed complaining of pain in the left hypochondrium and constipation; he vomited once after food. No pathological lesion detected; general appearance and condition good. The following morning he was rather collapsed; abdomen considerably distended. The pain in the left hypochondrium continued; also tenderness present. Temperature 95·2° F., pulse 120; tongue dry and furred. The left chest was abnormally resonant and the heart dullness obscured. Two enemas were given without result. Provisional diagnosis was intestinal obstruction, probably due to band in splenic region.

Operation.—Anæsthetisation was very difficult owing to the rapidly increasing dyspnœa. Abdomen was opened in mid-line as rapidly as possible with a view to relieving this. The distended intestines were allowed to come out of the wound. No relief to respiratory embarrassment. The transverse colon was enormously distended; the obstruction obviously lay somewhere in the region of the splenic flexure which could be felt drawn up under the left dome of the diaphragm. At this point respiration ceased entirely; all the usual means of resuscitation were employed with no response.

Autopsy.—An aperture was found in the tendinous portion of the diaphragm on the left side, admitting four fingers; a considerable coil of the splenic flexure of the colon had passed through the opening. Strangulation had occurred at the sharp edge of the aperture. The bowel occupied practically the whole left side of the thorax; lung was compressed to a small mass on inner aspect and heart displaced well to right.

The bullet in its passage had passed tangentially across the dome of the diaphragm. The scar so formed had healed only to yield later when the intra-abdominal pressure was raised by exertion.

Internal Hæmorrhage from Splenic Infarct.

CASE 2.—German prisoner of war, aged 24. Admitted to this hospital on Sept. 28th, 1918, with diagnosis of nephritis. Upon admission the urine contained a small quantity of albumin, trace of blood, no casts. The heart was enlarged; soft organic systolic bruit at apex. A little œdema was present, distributed generally over the body. He was treated for nephritis; not much improvement. On Dec. 3rd and 4th he complained of pain in the left hypochondrium associated with tenderness. The following day he suddenly became blanched, the pain meanwhile increasing, the pulse very rapid and thin; temperature subnormal. Shifting dullness in the flanks more marked on the left side was noted. A diagnosis of internal hæmorrhage from the spleen was made; cause doubtful. Two or three old and recent pinpoint hæmorrhages in the conjunctivæ were noted; retinæ normal.

Operation.—When the patient reached the operating theatre his general condition was so bad that it was decided to transfuse him before operation. Saline infusion was immediately undertaken and a donor found. Rather over a pint of blood was transfused by the citrate method, the biological test being used for incompatibility. The patient improved somewhat, and as it is in our experience better to wait a short time after transfusion before anæsthetisation, the operation was delayed. He was, however, obviously still bleeding rapidly and died before operation could be undertaken.

Autopsy.—General subcutaneous œdema. The heart was very enlarged; aortic and mitral valves sclerosed and on the surface many old and recent vegetations. Both lungs were œdematous. The peritoneum contained a large quantity of partially coagulated blood. One-third of the spleen had been converted into a large infarct extending back to the vessels in the hilum. Under the capsule, which had ruptured at one spot, was a fairly recent mass of blood clot; hæmorrhage was proceeding directly from aperture in splenic artery. The kidneys were "flea-bitten" and the mucosa of stomach and intestines showed similar points of hæmorrhage.

The case was obviously one of infective endocarditis, with an infected infarct in the spleen which had ulcerated its way through the wall of the splenic artery.

Acute Idiopathic Dilatation of the Stomach.

CASE 3.—German prisoner of war, aged 25. Admitted to this hospital on Feb. 3rd, 1919, with diagnosis of "acute abdomen." On the previous day after a midday dinner he was seized with a sudden pain in the epigastrium and shortly afterwards vomited. This seemed to give some relief and the case was not thought serious until the following morning, when he began to develop signs of peritonitis. No gastric history. Upon admission the condition was serious. He was continuously vomiting large quantities of slightly blood-stained material containing recognisable undigested food from the previous day. The abdomen was considerably distended, but at the same time quite rigid. There were shifting dullness in the flanks and tympanitic resonance over the front. The case was anomalous, but a diagnosis of peritonitis, probably due to perforation of a pyloric ulcer, was made and operation immediately undertaken.

Operation.—Abdomen opened in mid-line. The peritoneal cavity contained a large quantity of blood-stained, thin, purulent fluid. The stomach was enormously distended, occupying the greater portion of the whole abdomen; small intestines collapsed and pushed well down into pelvis. Stomach wall was thin and in places hæmorrhagic; no perforation found. A gastrostomy was performed by the Kader method and several pints of stomach contents were drained off. A large tube was inserted down to the duodenal region and another into the pelvis. The abdomen was sewn up, subcutaneous saline administered, and pituitary extract in 5 m. doses every three hours. The gastrostomy tube drained large quantities of increasingly blood-stained material. Death 17 hours after operation.

Autopsy.—The peritoneum contained some blood-stained fluid. The stomach was smaller than at operation, but its walls were so thin in places as to be quite transparent. The mucosa for the most part was deeply hæmorrhagic. The distension involved the first and second portions of duodenum; otherwise intestines were normal. No perforation or stricture; all other organs quite normal macroscopically.

The case fits in with the description of acute idiopathic dilatation of the stomach, usually a post-operative complication. In addition we here have a peritonitis most marked about the stomach. There are two possibilities: 1. That the peritonitis is the primary cause and the dilatation a secondary paralytic one. 2. That the dilatation is primary and the peritonitis due to the migration of organisms through the attenuated stomach wall. The man had been eating salted herrings; large masses of the sharp vertebral spines were found in the cæcum, the spines being so sharp as to perforate the bowel wall on the slightest pressure. The suggestion arises that infection may have been carried through the stomach wall in this manner, but the peritoneum usually deals very effectively with small infections of this nature. The case must, therefore, be left under the heading idiopathic.

We have to thank Lieutenant-Colonel R. Turner, R.A.M.C., for permission to publish these cases.

A CASE OF MULTIPLE OSTEOMATA OF THE SKULL BONES.

BY C. N. SLANEY, M.R.C.S., L.R.C.P.

THE following case is recorded on account of the comparative rarity of the condition.

Account of Case.

The patient, aged 40, destitute of relations and having no recollection of his parents, mentally approximates to the cerebration of a child barely a quarter of his own age. To the best of his recollection, in 1888, when about 12, he sustained a blow on the right lower jaw from a cricket-bat; three months later he noticed a swelling (see figures, 1). This gradually increased in size, was painless, and unaccompanied

by any objective symptoms except for a sensation of cramp when he drank anything cold. This tumour was subsequently removed by operation. No evidence of fracture; right ramus of lower jaw was much thickened. In 1890 a similar small tumour (2) appeared over the left superior maxilla, attributed to a blow by a stone. It was followed in 1893 by a painless swelling (3) in the left lower jaw; no trauma. The fourth tumour developed gradually in 1895, a few months after his discharge from hospital; no trauma.

Multiple osteomata of skull bones.

Tumour 5, also in 1895, he attributes to knocking his head against a wall; it became gradually larger in size, but is now stationary. Probably the condition of the right eye is due to a tumour (6) similar to the others; no injury. He does not know when his eye trouble commenced, possibly in 1888; his vision was defective when he attended school that year. The bony outgrowths are in lower jaw bilateral. As a whole they give rise to no harmful pressure symptoms except in reference to the right eyeball.

The patient appears well nourished, is 5 ft. 1 in. in height, and weighs 109 lb. There is complete nasal obstruction, apparently due to a general swelling and turgescence of the nasal mucosa; also slight pharyngitis and hoarseness of voice. He professes to see best with a – 12 D. sphere, but he prefers not to use glasses. The right pupil reacts to light and accommodation; left pupil dilated and fixed. With the margins of the orbits appearing normal, there is a small hard, movable tumour to be felt under the right upper eyelid, probably in relation with the lacrymal gland. The tissues of both upper eyelids are abnormally flaccid and overlap the corneæ; an appreciable amount of the sclerotic is visible below each cornea, more marked in right eye; lacrymation is continuous. Proptosis of the right eyeball has been present since 1888; vision in both eyes more defective since 1894 and still getting worse. Some increase of tension in right eye; no apparent narrowing of visual fields. Media in both eyes hazy from muscæ volitantes; discs and vessels smaller than usual. There are signs of old keratitis; positive Wassermann. His abdomen is protuberant and thorax rickety. There is marked indrawing of the skin with each heart-beat at its apex, apparently situated at left side of xiphisternal notch immediately below sixth costal cartilage. No dullness to right of sternum. His cranial nerves appear healthy except for loss of sense of smell. The angle of the mouth on the left side is drawn up, and he is unable to whistle. The left knee-jerk is absent.

Description of Tumours.

On examination of the several tumours the following points are observed:—

1. There is a linear operation scar 9 cm. in length along the lower margin of the mandible on right side from angle of jaw to symphysis; this scar is adherent in places to the underlying bone. The inner aspect of the lower jaw is smooth and regular, and appears normal on both sides; the lower margin of the right mandible appears roughened, probably as a result of the operation. The alveoli and teeth are normal in position and regular in line; enlarged lymphatic glands in submental and submaxillary regions. The outer aspect of the lower jaw appears normal on the right side from the symphysis to tumour 4. No signs of recurrence. This tumour was stony hard.

2. There is a faint linear vertical operation scar on left side of nose about 1·5 cm. in length; also on the superior maxillary bone at this site a slight prominence, neither painful nor tender, but hard and bony.

3. This tumour extends from 1 cm. from symphysis to within 2 cm. of angle of left jaw. It envelops the lower margin of the mandible and extends upwards to just above a horizontal line level with angle of mouth. It is painless, hard, irregular in outline, circumscribed, and sharply defined; skin not adherent; it moves with the jaw and does not interfere with deglutition; no impediment to free movements of mandible. Observed from inside the mouth there is the appearance of a hard tumour growing from the outer plate of the mandible below the alveolar margin; there is no so-called expansion of the bone, but a tendency to fullness is noted over the upper part of the vertical ramus in the region of the parotid gland, but this fullness is not bony in character. He believes that this tumour is increasing in size.

4. This tumour extends from 4·5 c.m. behind the angle of the right jaw to within 6·5 cm. of the symphysis; it does not envelop the lower margin of the bone, but extends up to the zygomatic arch; it is well defined, both anteriorly and posteriorly and at its lower margin, but seems to shelve off into the surrounding tissues at its upper part. It is hard, irregular in outline, and the margin of the lower jaw with its angle can be felt below the tumour, which has the appearance of growing from the outer plate of the bone below the alveolar margin, more or less in an upward and backward direction. The tumour moves with the jaw and the skin is not involved. He believes also that this tumour is increasing in size.

5. The tumour resembles those mentioned, is hard and bony, and painless. It appears as a circumscribed irregular swelling on the left side of the frontal bone 3 cm. above the orbital process; it is conical in shape, with its apex projecting upwards, outwards, and backwards, resembling a horn 3 cm. in diameter and 1·25 cm. in height. This tumour is stationary in growth, he thinks.

Parkhurst, I.W.

A CASE OF CONGENITAL MULTIPLE SARCOMATOSIS.

BY J. A. PERCIVAL PERERA, L.R.C.P., M.R.C.S.,
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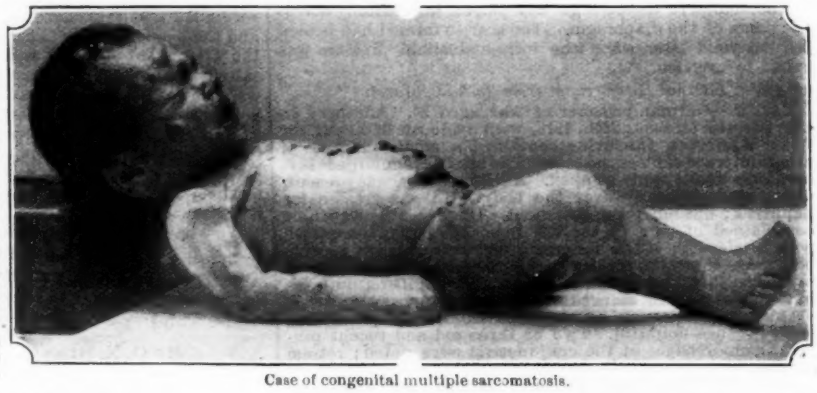
THE following case is of interest, on account both of its rarity and of the wide dissemination of secondary growths.

The patient, a full-term male baby a fortnight old, was admitted into the Sheffield Children's Hospital, under the care of Dr. H. Leader. Multiple rounded and nodulated tumours were scattered throughout the body—e.g., head, thorax, abdomen, upper and lower extremities. These tumours, present from birth, were of varying sizes, from 1 × 1 × 0·5 cm. to 4 × 5 × 1 cm. There was superficial ulceration in the larger tumours; one or two on cheek and legs had started to fungate. The consistence ranged from jelly-like softness in the more superficial ones to more or less bony hardness in ones attached to the long bones, ribs, and skull.



Case of congenital multiple sarcomatosis.

The child weighed 10 lb. on admission, and was well nourished. He was then suffering from diarrhœa and also

bronchitis. Large masses, presumably enlarged mesenteric glands, were felt plainly in the abdomen. After a fortnight the child died. I did a post mortem on it and made the following report.

External appearance.—A well-nourished male baby weighing 9 lb. Numerous rounded tumour-like masses varying in size from 0·5 × 1 × 0·5 cm. to 4 × 5 × 2 cm. scattered throughout the body. The tumours seemed to arise from different layers of the body in different places—e.g., some from skin, some from connective tissue, some from muscles and their tendons, and some from periosteum. Many of the tumours, especially the larger ones and those where pressure had been brought to bear by the weight of the body, were ulcerated.

Internal examination.—Scalp and skull: Numerous rounded growths, 2 × 3 × 1 cm., ulcerating through the scalp and attached to the diploë of the skull. Apparently non-capsulated. Brain and meninges: Normal. Thorax: Thymus gland normal. Mediastinal glands matted together, very hard to the touch, and very much enlarged. Pericardium: The parietal layer contains one or two hard rounded nodules, 2 × 1 × 0·5 mm., not extending to inner wall. Heart: Normal. The ribs and vertebræ were studded with tumour-like growths apparently coming from the periosteum. Abdomen: Liver: Several nodules 2 × 3 × 1·5 cm. Spleen: Three nodules of various sizes. Right kidney: One nodule at lower pole. Left kidney: Normal. The retroperitoneal and mesenteric glands matted together into groups; very hard and in places as large as billiard balls.

Microscopic examination of sections cut from different organs and done at the Sheffield University, revealed small round-celled sarcoma.

It was quite impossible for me to say where the primary growth started. It is possible it started as a periosteal sarcoma of one of the bones and rapidly spread throughout the body by metastases.

As to family history, father and mother are healthy, this being their first child.

I am indebted to Dr. Leader for permission to publish this case.

A CASE OF CIRSOID ANEURYSM OF PALM OF HAND.

BY J. TODESCO, M.R.C.S., L.R.C.P., D.P.H. ENG.

THE following case appears uncommon, as there was no history of trauma or other cause to explain the condition.

The patient, a woman, aged 58 years, was admitted to the West London Hospital on April 8th, 1919, with the history that she had first noticed a swelling over the palm of her right hand 20 years ago. During that period it had broken down on several occasions, with discharge of pure blood. The bleeding had never been severe, and she had been able to do her house-work. For the last ten weeks a similar swelling had appeared on the palmar aspect of the right hand over the terminal phalanx of the middle finger; this had broken down and become septic. (See figure.)

Cirsoid aneurysm of palm of hand.

The patient said that both the swellings over palm of her right hand and over middle finger had been painless, but since the latter had broken down she complained of a dull burning sensation in her hand. She was married, with four children; had had no miscarriages. The Wassermann reaction was negative; no bony changes by X ray; both arms were equal in length.

On examination, there was a rounded tortuous pulsating tumour over centre of the palm of the right hand, with some scarring of the skin near the base of the middle finger. The distal and middle phalanges of this digit were gangrenous. There was also some swelling with "mottling of skin" (which was unbroken) over the two distal phalanges of the right ring finger; and some engorgement of veins of forearm. On compressing the arteries at the wrist the swelling over the palm got smaller, but on releasing pressure it swelled out again. On auscultation a distinct "souffle" was heard over the palm, being conducted both upwards along the proximal phalanges of middle finger and downwards towards wrist.

Owing to spreading sepsis and pain the third finger was amputated on April 24th at the metacarpo-phalangeal joint.

My thanks are due to Lieutenant-Colonel Donald Armour, R.A.M.C., under whose care the patient had been, for permission to record this case, and to Sister Wilks, in charge of the X ray department, for the photograph.

Medical Societies.

ROYAL INSTITUTE OF PUBLIC HEALTH:

LONDON CONFERENCE.

COMMENCING on June 25th the Royal Institute of Public Health held at the Guildhall a conference, in which the chief aspects of public health—the work of the new Ministry, the prevention and arrest of venereal disease, housing in relation to national health, maternity and child welfare, and the tuberculosis problem—were separately and fully discussed, the debates culminating in a series of resolutions which focussed the present position in regard to these problems. The inaugural meeting took place at the Mansion House, under the direction of the LORD MAYOR, who was supported by His Majesty King MANUEL, Earl BEAUCHAMP, Viscount KNUTSFORD, Lord WILLOUGHBY DE BROKE, Lord LEVERHULME, and others.

The Lord Mayor's Speech.

The LORD MAYOR made a graceful reference to the imminence of peace, and to the generosity of Lord Leverhulme which had resulted in the Institute being well supplied with technical equipment, thus enabling it successfully to carry on during the trying time of the war. The Institute was also to be congratulated on at length seeing established that Ministry of Health which it had continuously advocated since it was first urged at the Dublin Conference in 1892. The fine work done by the Institute in the 30 years of its existence strengthened its case for endowment, especially now that there was a greatly increased activity in all that concerned the nation's health.

The Need for a Permanent Endowment for Research Work.

Lord LEVERHULME announced a donation of £100 from the King and a generous cheque from the Prince of Wales. Good health, he said, was at the very foundation of a large and profitable output. In order to carry out necessary research work in public health matters it was essential that the Institute should have a permanent endowment, and he earnestly appealed for financial support to that end. One of the objects was to found a national journal of preventive medicine, and for such a good programme as the Institute had set itself he thought there was a good case for a substantial Government grant. He had always been much impressed by the Institute's economy of management and efficiency of service, and he was certain the money received would be wisely expended. £30,000 was the sum asked for, and he proposed a resolution urging the Government to make a grant towards this amount.

H.M. King MANUEL (an honorary Fellow of the Institute), in seconding the resolution, said that everything which could now be done for the improvement of public health would be of the utmost importance. We had recently been living in times when brains, money, and everything we possessed were used for purposes of destruction; let the people now do likewise in the work of reconstruction. The one thing which above everything else won the war was the health of the country. In conclusion, His Majesty trusted that the knowledge gained in dealing with the men disabled in the war would be applied to the case of the civilian population.

Lord BEAUCHAMP, who was President of the Berlin Conference before the war, said we could not expect satisfactorily to deal with the reconstruction of the national life unless the standard of health of the community became higher than in the past; and he hoped the Government would suitably recognise the University work being done by the Institute in preparing students for degrees in public health.

Lord WILLOUGHBY DE BROKE also supported the resolution. He said the need was to bring to maturity as many British boys and girls as possible, and rear them in such surroundings, and with such knowledge of the fundamental laws of health as would enable them to promote national efficiency in the highest degree. In hoping for the Ministry of Health a great and increasing success he pleaded for a universal grasp of the leading facts of science, which was a fundamental necessity to the full power of the race.

Further support came from Sir THOMAS OLIVER and the Director of the Medical Department of the Navy, the DEAN of ST. PAUL'S, and Lord KNUTSFORD. Dr. J. UTTING (Liverpool) objected to the part of the resolution which asked for a Government subsidy, as it would mean, in his opinion, that the Institute would be under the "blighting influence of bureaucratic control."

The resolution was carried.

On the proposition of the BISHOP of HEREFORD, seconded by Dr. MARY SCHARLIEB, the Lord Mayor was cordially thanked for his hospitality.

I. THE WORK OF THE MINISTRY OF HEALTH.

Dr. W. R. SMITH (Sheriff of the City) presided at this session. He said it was difficult to exaggerate the far-reaching importance of training men and women to take up public health work. The school medical service originated with the School Board for London, and it was now a great satisfaction to find Sir George Newman, late medical officer to the Board of Education, attached to the new Health Ministry. Many health measures owed their origin to special efforts for local application only, efforts promoted by a Health Committee of some large municipality. This was the case with such measures as the Infectious Diseases Notification Act, that for the notification of tuberculosis, the Notification of Births Acts, while other measures dealt with town planning, a pure milk-supply, milk for mothers unable to suckle their children, &c. He hoped the new Ministry would not put into operation any schemes which would destroy or impair the usefulness of such bodies. He thought adequate support for research should be forthcoming from the Treasury, and those intended for conducting research should receive careful training to that end. They needed to have not only a scientific training, but patience, an analytical mind, and sound judgment. He pointed out that great powers were possible to the new Ministry through the channel of the Orders in Council that the Act provided for, which Orders became operative if no opposition came from either House within 30 days.

Sir H. KINGSLEY WOOD, M.P., spoke at some length on

The Central Organization of the Health Ministry.

He hoped that the Consultative Councils would receive the benefit of the long experience of the Institute of Public Health. He thought that in former days and up till very recently the preventive aspect of public health had been almost entirely lost sight of; the problem had never been adequately tackled as a whole, but had rather been approached by jerks, stimulated in many cases by the menace of an epidemic or pestilence. He agreed there had been in this country an utterly inadequate provision for research, a beggarly £60,000 a year being the sum expended on it. A Medical Research Department was one of the equipments of the new Ministry, and this would be under the direction of the Privy Council; nothing short of this was adequate for a matter of such world-wide importance, for its activities would embrace the whole of the British Empire, with branches in every part. One of the most serious indictments against our health conditions had been that we had, to a large extent, taken a parochial instead of a national view of health affairs, and that view had been guided too much by considerations as to rate increases. For that he considered the Government were largely to blame, as they had not given sufficient grants to local authorities to enable them to carry on their work. Until the formation of the Health Ministry, 21 Government departments or sections were dealing with health affairs. There were a large number of laggard authorities which needed to be stirred up to the adoption of the modern spirit in administrative affairs. He paid a tribute to the memory of Lord Rhondda, who did so much to bring about what all were so pleased to see established. With regard to tuberculosis, the employed class was entitled to such provision as had been made for sanatorium benefit, but a large mass of people had no right and no access to the same treatment. Many thousands of pounds were being spent in connexion with this disease, of which, he thought, about 75 per cent. was thrown away.

Dr. F. E. FREMANTLE (consulting medical officer for Herts) discussed the question of

Local Administration in Health Matters.

He had drawn much help from experience of military hospitals during the war; in civil work, however, considerable latitude must be allowed. The ultimate centre of the whole activity was the family life. Under the new Ministry health in the factory was left out at present, but he hoped it would soon be included. But little had been done as yet in the matter of national assistance for the poor professional and commercial classes. He urged that there should be one authority, out of which the separate activities should be developed as the need for them arose. He believed in coöption on central bodies of persons with special knowledge which would be useful to the community. Prevention and cure could not, in practice, be separated, therefore there should be one administrator for both. The essence of public health progress should be a sense of individual responsibility, and measures would be most effective of which the public had become convinced as to their necessity.

Dr. J. MIDDLETON MARTIN spoke of public health administration in Gloucestershire, of which he is county medical officer. He emphasised the serious factors of distance and sparse populations, and therefore the need of improved transport to secure prompt consultations.

Lady BARRETT, M.D., dealt with

The Women's Aspect of the Work of the Ministry of Health.

The speaker made a strong plea for efficient home administration. The unit of the local area was the home, and the administrator of the home was the woman. Housing schemes might be perfect, but unless the women in those houses had the knowledge and the willingness to use the facilities which had been planned for them, housing schemes would not make any appreciable difference in the health of the country. The same was true of infant welfare schemes; there must be women workers who had access to the homes, otherwise even the women who attended instruction might hear all that was said and yet go home without doing anything. All strong and irresistible habits were learned in infancy, and the necessary health habits could only be inculcated if the women had not only the knowledge but also the goodwill to do it. The people who at the moment had the greatest influence in the home were women of three skilled functions—nurses, midwives, and health visitors. These women, therefore, required careful representation in connexion with the Ministry of Health, because they knew the difficulties met with in the practical application of the various schemes. Men and women were working together for the good of the race; it was not a male race or a female race, but both; and therefore both should be combined for teaching and for administration.

In the further debate a large number took part, and the following resolutions were passed and ordered to be sent to the Ministry of Health:—

(1) That this Conference views with satisfaction the contemplated creation of Advisory Councils in connexion with the work of the Ministry of Health, and urges that the services of those who have had long, wide, and practical experience in administrative and executive public health should be secured upon those councils.

(2) That in view of the large national demands which will be made on the Ministry of Health as an organising and controlling centre it is desirable that it should not be burdened with functions and details which may result in depriving the local authorities of a sense of responsibility and a sense of initiative.

(3) That in the view of this meeting sanitary inspectors, health visitors, and similar classes of public health officials should be adequately trained, and that the present system of examinations should be coördinated so as to secure one qualifying examination for the whole country.

(4) That in view of the invaluable services rendered by women who are serving as elected or coöpted members upon local authorities, or as officials of such authorities, this Conference is of opinion that women should be included in larger numbers on all advisory bodies, and that greater facilities be provided for the training of expert women workers in the homes of the people.

(5) That in the opinion of this Conference all questions comprised within the scope of port and maritime sanitation should receive the earnest attention of the Ministry of Health, and in order to ensure greater coöperation and confidence between British and foreign port authorities, the widening and readjustment of the agreements reached at the International Sanitary Convention are necessary.

(6) That greater use should be made of the services of the British Consuls in foreign ports in obtaining and transmitting information relative to the sanitary condition of the ports.

(7) That it is desirable that smaller authorities shou'd be joined together with the view of securing the whole time services of medical officers of health and other sanitary officials.

II. THE PREVENTION AND ARREST OF VENEREAL DISEASE.

The chair at this session was occupied by Sir WILLIAM MILLIGAN (Manchester) in the absence of Lord Sydenham. The chairman reminded the audience of the initial step in a national movement against these diseases taken by Sir Malcolm Morris. He impressed upon the meeting the widespread prevalence of syphilis and gonorrhœa and the large number of cases going about to-day in an infective condition. He assumed that none of those present were anxious to see a revival of the "C.D." Acts; the measure had been tried in nearly every country on the globe, and practically every country had given it up or was about to. The subject must be approached from a different angle; the public must be educated and shown the dangers of the disease and the calamities which followed in its wake. The universities devoted too little attention to the teaching of this subject; so widespread a disease should be carefully taught to all medical students. Women must be properly paid for their work, thus removing temptation from the path of the poor self-supporting girl. He hoped to hear opinions as to whether compulsory notification was advisable, now or at any time. If adopted was it likely to act as a preventive measure? A very important question was that of prophylaxis; should it be encouraged by the profession? Further, should inmates of institutions who were suffering from these diseases be retained there until they were cured? The present methods of treating syphilis were complicated, and required considerable technical skill, and he thought the aim of syphilologists should be to secure some method of treatment which was somewhat more simple and easily applicable, so that it could be put into a greater number of hands. It was quite a mistake to regard gonorrhœa in the light-hearted way which many people did, and it would be useful for this gathering to express an opinion on this. He regarded gonorrhœa as almost as destructive as syphilis. The danger in the matter of spread was not the street-walker but the clandestine prostitute, who used this as a means of eking out her underpaid living. He doubted if gonorrhœa, especially among women, was ever cured. He hoped the discussion would be focussed on a resolution.

The Woman's Standpoint.

Dr. MARY SCHARLIEB presented the subject from the woman's standpoint, which was, she said, in the estimation of the public, somewhat of a novelty because women and children had been supposed to know nothing of this evil. Those who did not know of an evil could not protect themselves against it, and it was unwise to keep women in ignorance of the troubles to which they might become victims. It was still more criminal for parents to neglect to teach their children to value and respect their bodies, and how to maintain their bodies in purity, temperance, and chastity. When parents were either unwilling or unable to discharge that sacred duty they should suitably delegate it to others, such as schoolmasters and schoolmistresses. Dr. Scharlieb proceeded to speak of these diseases as they affect pregnant women and children before and after birth. A considerable percentage of the 100,000 deaths of unborn children which occur every year were due to these diseases. In England and Wales something like 800,000 babies were born alive every year, and of them about 100,000 died before the anniversary of their birth was reached, many from syphilis which they derived from their mother before birth. 20,000 die within a week after birth. None of the ordinary causes of infantile mortality—bad air, bad food, bad milk, bad maternal management, whooping-cough, measles, bronchitis—were operative so soon after birth; the majority who died so early did so because they were born in a dying state, a heavy percentage owing this to infection with syphilis. It had been calculated that about 30 per cent. of all the blindness of the country, 30 per cent. of the deafness, 16 per cent. of the insanity, and most of the feeble-mindedness was due to venereal disease. Gonorrhœa as it affected women was a loathsome ailment and a dangerous disease. Evidence was given before the Royal Commission on Venereal Diseases that one-half of the sterility of the country was due to gonorrhœa, and a distinguished medical witness attributed one-fourth of the serious pelvic conditions which needed a major operation to the same cause. Yet an Irish medical student, when asked how he would treat these diseases, replied, "With contempt." There were now very few large towns which had failed to provide clinics and schemes for treating these diseases, a wonderful progress in less than three years, and the speaker urged the members of this Conference to do their best to get the work enlarged.

The Civilian Standpoint.

Sir MALCOLM MORRIS treated the subject from the civilian standpoint, which, he said, was a more complex one than that of the Army, for in the case of the latter, masses of men were under strict discipline and instruction, while the ordinary population consisted of men and women, young and adult, some of them not of high intelligence, and with but a rudimentary sense of responsibility; hence they did not seek advice until the disease was far advanced, and were apt to withdraw themselves from treatment as soon as the obvious symptoms were suppressed. He referred with satisfaction to the propaganda work which had been carried out by the National Council for Combating Venereal Diseases, particularly during the war, in lecturing to two million men. The most promising form of propaganda was through teachers, for no boy or girl should go out into the world ignorant of sex perils, or of the value of sexual continence. He referred to the poster and other propaganda work, and said that the giving effect to the Report of the Royal Commission by the Local Government Board was one of the brightest incidents in the public health administration of this country. There should be no area without facilities of ready access for the treatment of these diseases. Some thought the demobilised soldier was spreading the disease; others that the soldier was really the victim of the non-prostitute girl and woman who during the war had fallen into a loose mode of life. Relaxations of various kinds at the present time favoured a recrudescence of venereal disease, such as followed previous wars. Prophylaxis he did not regard as a wise, but as a panicky measure, though he preferred not to enter into the ethics of it. By supplying a man with a prophylactic outfit, he was released from the restraint which might otherwise have been operative; certainly it would not diminish a tendency to promiscuity. Dr. Otto May had resigned from the National Council because that body did not countenance prophylaxis in that way, but its policy was still maintained, for otherwise the great moral forces of the nation would be antagonised to the Council. He moved:—

That in the opinion of this Conference it is absolutely essential, alike from the military and civilian standpoints, including also the interests of women and children, that legislation affecting venereal disease should be amended and harmonised, so far as it possibly can be, with legislation affecting other forms of communicable disease, the aim being to ensure continuity of treatment and the prevention of the spread of infection.

Mr. E. B. TURNER seconded the resolution. He said he felt sure there would be set up some form of confidential notification of these diseases, which would ensure that most important desideratum, continuity of treatment, and treatment which was efficient and skilled. This meant the surmounting of very formidable obstacles. Very few doctors, owing to the sacredness of professional confidence, would voluntarily consent to notification, but if it became a statutory compulsory requirement he thought most would soon fall into line without trouble. Legislators must be shown the necessity for some such revision in the law. He concluded by an appeal to do all that was possible to stop the activities of the venereal quack by means of prosecutions.

Inadequacy of the Present Measures.

Dr. J. H. SEQUEIRA, who has charge of the London Hospital Venereal Clinic, said he was convinced more and more that the measures adopted at present in combating these diseases were inadequate and cumbersome, as well as expensive in time and money. He described the course of treatment, and explained the need for early advice, regretfully remarking that 40 per cent. of those who attended the clinic did not complete the treatment, despite the organised

efforts to follow cases up and the emphasis laid upon the taking of the thorough course. From the scientific standpoint these diseases were among the easily preventable, and the natural question was, Why were not prophylactic measures more thoroughly carried out? The reason was a moral, not a scientific one. For a long time he was against prophylaxis in this matter for that reason, but he had had proof of such important results from prophylaxis, which he narrated, that, in view of the great prevalence of the diseases, he had changed his opinion, especially as he failed to differentiate ethically between supplying a man with a prophylactic outfit, and giving him an address to which he could go for so-called "early disinfection" after the risk had been run.

Sir THOMAS BARLOW said that until adequate national provision for treatment had been set up it was undesirable to lay down penal regulations regarding notification. The more treatment centres were set up, and the more a kindly and humane tone pervaded their administration, the more would sufferers avail themselves of these means of cure. He gave the results arrived at by Dr. F. H. Teale in regard to the antiseptic function of soap and water in the case of the gonococcus. Exposed to a 2 per cent. solution of ordinary yellow soap for two minutes, only a trace of growth remained, and when exposed for four minutes it gave no growth at all. Answering Dr. Sequeira, he urged a full consideration of the moral aspect, as sexual promiscuity had been one of the fatal deteriorating influences in civilisation, seen in the decay of the Roman Empire. A loose morality on this question tended to weaken the marriage bond and produce all its dangerous sequelæ. He urged strict cleanliness, especially after risk had been run, but not the supplying of a prophylactic packet.

Mrs. GOTTO said the question was really as to how to make the provisions for treatment available to a mixed general community in a way which would be helpful medically without being harmful socially. Social, medical, and ethical ideals converged into one, for she did not believe a real truth was ever divided.

Methods of Diminishing Venereal Disease.

Dr. OTTO MAY said that to diminish these diseases two lines of effort could be used—reducing the practice of sexual promiscuity, or making such promiscuity less dangerous. The standard of conduct at the present time was very low. Only 9 out of 100 officers between 19 and 24 years of age did not admit sexual experience with females, a fact which connoted an equally low standard in the other sex. If that was the case after thousands of years of ethical teaching, did it not suggest that there would not be much progress in this matter along that road? With the present delayed age of marriage there was possibility of some damage arising from enforced chastity; alienists knew that much functional nervous disease, even going on to homo-sexual manifestations, ensued on enforced chastity. He did not say this by way of apology or of an incentive to unchastity, but the question had to be faced. As to the dangers arising from promiscuity, physically much was possible in the way of prevention by disinfection; the chief difference of opinion was as to the nature of the disinfection to be employed. But he agreed with Dr. Sequeira in seeing no ethical difference between telling people where to receive absolution from the effects of misconduct and telling them where to get a package which would give them similar absolution. Hospitals could not be induced to remain open day and night in order to be ready to give the "early treatment" at all hours, and every hour of waiting increased the danger to the victim.

In the further full discussion Mrs. PALMER (Southampton) urged the straight view on this national question, putting aside all hypocrisy. Ordinary people had two powerful impulses, those of self-preservation and the exercise of the sexual function, and it was necessary to find out whether our system of society catered for both. Seeing the low standard of morality at present prevailing, we must not allow high ethics to prevent us using every means to stamp out venereal disease. What people seemed afraid of was having against them the organised force of the Church. It was grievous that to hold views favouring prophylaxis meant resignation from the Council for Combating Venereal Disease.

Mr. POWELL pleaded that life for all classes of people must be made fuller and sufficiently interesting; they should not feel that sexual intercourse was their only form of amusement.

The CHAIRMAN, in putting the resolution, said all were agreed as to the need for teaching biology to children, and the proper persons to do it were the father to the son, the mother to the daughter. But if they objected to do it another means must be open. He had written to the headmasters of every public school in England asking whether they gave instruction in sexual hygiene. The reply from almost every headmaster was, that when they found that the boy had not been told anything about it—which was almost universal—the headmaster took him for a walk or had him in his study on the eve of his departure from school and told him what was necessary. That was the next best to parental instruction.

The resolution was carried with two dissentients.

(To be continued.)

THE MEDICO-LEGAL SOCIETY.

Annual Meeting: Election of Officers.

THE annual general meeting of this society was held on June 24th at 11, Chandos-street, W., Sir W. J. COLLINS being in the chair.

Mr. R. Henslowe Wellington was elected President for the ensuing year; Sir J. Macdonell, Mr. A. H. Trevor, Dr. M. I. Finucane, Dr. W. H. Willcox, and Dr. F. G. Crookshank vice-presidents; Mr. E. Goddard and Dr. B. H. Spilsbury honorary secretaries.

The reports of Mr. WALTER SCHRODER, the honorary treasurer, and of the honorary secretaries were adopted.

The CHAIRMAN referred to the work done for the society, since its birth in 1901, by the President-elect (Mr. Henslowe Wellington) and alluded feelingly to the loss sustained during the last 12 months in the deaths of two successive Presidents, Sir Samuel Evans and Dr. F. J. Smith, in their terms of office.

At the conclusion of the business of the annual general meeting an address was given by Dr. LIONEL WEATHERLY, entitled—

"*A Point of General Importance: The Interpretation of Secs. 47 and 321 (ii.) the Lunacy Act, 1890.*"

Dr. Weatherly said that he would divide his address into three parts: (1) a preamble; (2) a story; (3) a moral. By way of preamble he alluded to the necessity for care, on the part of lawyers, in the drafting of Bills, particularly those concerning matters of medical importance; and he insisted on the necessity for the participation of medical interests when such Bills or Acts are in contemplation. His "story," which was narrated impersonally, referred to incidents which are already widely known, and was concerned with the events that followed the request made to a consultant in lunacy, by the relatives of a certified lunatic, to visit that person in a county asylum where he was actually a paying patient. Difficulties in obtaining the consent of the superintendent of the asylum to the proposed visit of the consultant were only overcome by the issue, under pressure, of an order for admission made by a Commissioner in Lunacy; but, although physical admission to the asylum and access to the patient were obtained, the consultant did not in the event secure either personal communication with any medical officer of the asylum or the opportunity of being informed, by a perusal of the records or otherwise, of the patient's case. Legal action was taken, on behalf of the patient's relatives, with a view to the overcoming of what was considered to be the intentional withholding of information necessary if the visit was to be other than a futility; and it was submitted that, on a certain interpretation of Secs. 47 and 321 (ii.) of the Act of 1890, merely physical admission to the asylum and access to the patient was not a proper compliance with the order of the Board of Control. The action failed; it being held by Mr. Justice Darling that the order had been technically fulfilled, and that there was no power in the Board of Control to order the production of the records to an independent consultant visiting a patient at the request of the relatives.

Dr. Weatherly discussed the extent to which, in his opinion, this ruling was open to dispute, and urged the necessity in the interests of the insane for an alteration in the law, if, indeed, it has been correctly interpreted by Sir Charles Darling. Dr. Weatherly drew attention, moreover, to an early contention of the Board of Control during the progress of the events narrated, that such a proceeding as

the visit of an independent medical man to such a patient in a county asylum is "unprecedented"; and he emphasised the fact that it had been repeatedly stated (and there was nothing to show the contrary) that the action taken by the asylum superintendent, whilst seemingly of an obstructive nature, was in no sense personal and directed against the particular consultant engaged.

An important and interesting debate followed the address, in which Mr. GARDINER, Mr. HARVEY HARTLEY, Mr. GODDARD, Mr. HENSLOWE WELLINGTON, Dr. CROOKSHANK, and others took part.

Summary of the Discussion.

The CHAIRMAN, in summarising the discussion, said that he, an erstwhile chairman of the L.C.C. and a member of its Asylums Committee, certainly did not regard as "unprecedented" the admission of medical men to see asylum patients, and to inquire into various matters concerning them. But the question was one to be considered impersonally, and in discussing the purely legal aspects of the case he concluded by observing that there appeared to him good grounds for seeking amendment of the statute. In view of the representations made by the Medico-Legal Society in earlier years to successive Lord Chancellors in regard to death certification and coroner's law, he did not think it would be outside their province to make, if so disposed, similar representations in regard to this case also.

Dr. WEATHERLY briefly replied to various questions put to him, and thanked the society for the care and sympathetic interest with which the subject had been discussed.

Reviews and Notices of Books.

A Treatise on Orthopædic Surgery. By ROYAL WHITMAN, M.D., M.R.C.S. Eng., F.A.C.S., &c. Sixth edition, thoroughly revised. Illustrated with 767 engravings. London: Henry Kimpton. 1919. Pp. 914 + xii. 36*s*.

IN the preface to the sixth edition of this well-known work Dr. Royal Whitman instances the recent severe epidemic of anterior poliomyelitis in New York and its vicinity and the crippling accidents of war as two factors which have definitely established the place of orthopædic surgery in the popular mind. But it is, as he says, rather the constant purpose of this specialty to prevent and correct deformity and to preserve and restore function which governs treatment from beginning to end, and is its chief distinction. It is not necessary to dwell upon the merits of this well-known text-book. Suffice it to say that it has kept well up to date. But the final chapter on military orthopædics, the addition of which distinguishes this edition, calls for some comment. This chapter reminds us that the military authorities of the United States were able to make use of the Allies' experience and that they paid great attention to the examination and preparation of recruits. In this work orthopædic surgeons took a large share. The primary examination decided whether a recruit should be unconditionally accepted or rejected, or if he should be conditionally accepted as fit for certain duties, but not for all the strains of active service. Under the rules of the selective service governing orthopædic disabilities these conditional cases and many of the recruits who broke down under training were treated in special training-camps, where they were divided into groups according to the character and degree of their disability and drilled under the supervision of orthopædic surgeons. Strains of the back and weak and disabled feet were the commonest disabilities.

The regimen in these camps was severe and calculated to discourage all malingering. Dr. Whitman lays great stress on the importance of eversion of the front of the foot as indicative of weakness. The normally low-arched foot is not thus everted and is generally quite fit for the strains put upon it. Weak and flat feet appear to be the bane of the citizens of the United States, and hence far more is heard of these disorders in military orthopædic work there than in this country. Dr. Whitman makes the interesting statement that although strain or discomfort in the back is noted in about 25 per cent. of the recruits, in most instances it is relieved by the military drill and by the posture enforced by carrying the pack.

The treatment of fractures, of nerve injuries, and the preparation of amputation stumps are adequately dealt with, but call for no remark. They embody the conclusions to which four years of war have led most surgeons. A useful section is that on Attitudes of Election, in which the standard position in which an ankylosed joint is most useful is considered for all the chief articulations. We note that Dr. Whitman favours full extension as the position of election for an ankylosed knee, therein differing from Lieutenant-Colonel Brackett, the Director of Orthopædic Surgery in the United States Army, who much prefers an angle of 135°. Sir Robert Jones, and many other experienced surgeons, however, agree with Dr. Whitman, whose opinion appears to us to be a sound one.

A short but useful section on Reconstructive Treatment concludes the chapter and the book.

Nerve Injuries and their Treatment. By Sir JAMES PURVES STEWART, K.C.M.G., C.B., M.D., F.R.C.P., Senior Physician to the Westminster Hospital, &c.; and ARTHUR EVANS, M.S., M.B., F.R.C.S., Surgeon and Lecturer on Surgery at the Westminster Hospital, &c. Second edition, revised and enlarged. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 250. 12*s*. 6*d*.

WE reviewed this book favourably on its first appearance. In its new edition it is increased in size by some 40 pages and contains considerably more illustrative instances of lesions of the various peripheral and cranial nerves. The authors have seen in all some 520 cases of nerve lesion, and they have marshalled their facts in a logical and readable way. The photographs and diagrams number some 40 more than in the original edition. In its present form the book is sure of appreciation by neurologist and practitioner alike.

General Medicine: Practical Medicine Series. Vol. I. Edited by FRANK BILLINGS, M.S., M.D. Chicago: The Year Book Publishers. 1919. Pp. 622. $2.50.

THIS volume is the first of a series of eight, each on different aspects of medicine, published at intervals throughout the year, and each reviewing 12 months' original work on the subject with which it deals. The first volume on general medicine covers considerable ground, and includes abstracts from papers on such rare diseases as lipodystrophia progressiva. We find no reference here to the work of Dr. Lewis on the effort syndrome. Possibly this is not considered to come within the range of general medicine. The work is classified into various sections. That on tuberculosis may be taken as a fair sample of the quality of the whole volume. It contains no striking papers, but some are worth careful study, especially those on errors in diagnosis (p. 25) and Roentgen ray diagnosis of pulmonary tuberculosis (pp. 27 and 29), and on clinical experience with Koga's cyanocuprol (p. 59). The others deal with a variety of subjects, including nomenclature, system of examination, lung reflexes, artificial pneumothorax treatment, tobacco-smoking, gastro-intestinal disorder, the tuberculous soldier, and prognosis. Writing on the last Dr. Fishberg omits to emphasise the prognostic value of progressive fibrosis, and in the paper on a system of examination no mention is made of the importance of determining the position of the heart and the area of superficial cardiac dullness.

The articles seem to be abstracted almost entirely from British and American journals, from which practitioners without knowledge of foreign tongues can make abstracts for themselves, but it is clear that many will not have time or desire to do so.

Irish Ethno-Botany and the Evolution of Medicine in Ireland. By MICHAEL F. MOLONEY, M.B., Ch.B. N.U.I. Dublin: M. H. Gill and Son, Ltd. 1919. Pp. 96. 4*s*. 6*d*.

Dr. Moloney tells us in his preface that his book "aims to give in outline the evolution of medicine in Ireland, and to indicate the comprehensive character of Irish ethno-botany." The outline is exceedingly sketchy and we cannot see, so far as this book is concerned, that Irish folk-botany differs much from the folk-botany of England, Scotland, or Wales. Those who are acquainted with the FitzPatrick lectures of the late Dr. Frank Payne or those of Sir Norman Moore will find that very many of the medicinal uses of plants given by Dr. Moloney are also given by the two writers just cited. For instance, Yarrow—i.e., *Achillea Millefolium*—is stated on p. 29 by Dr. Moloney to

have been used as a cure for toothache. The same use of the same drug appears in the Anglo-Saxon translation of the Herbarium of Apuleius, quoted by Dr. Payne in his "English Medicine in the Anglo-Saxon Times." Again, Dr. Moloney gives an old Irish saying about salvia, which he translates as follows: "While the sage is on the mountain no one should die." In the well-known poem of the School of Salerno, Regimen Sanitatis, written about 1100 A.D., we find the following: "Cur moriatur homo cui crescit salvia in horto?" though with great good sense the writer gives the answer, "Contra vim mortis non est medicamen in hortis." On p. 44, Dr. Moloney says that saffron is used by the country people to-day "to bring out the rash of measles." This use is not confined to Ireland, for saffron tea is a common English rural remedy for measles even to the present day. Dr. Moloney gives a very full list of plants used in native Irish materia medica, but only in a very few instances does he say for what complaints the various preparations are used. As to Part II. of his book, which is called "History of Medicine in Ireland," it is so slight as to be of little value. The best features of the book are the indices, of which there are three, in Erse, English, and Latin respectively.

Nerves of the Human Body. By CHARLES R. WHITTAKER, F.R.C.S. Edin., Senior Demonstrator of Anatomy, Surgeon's Hall, Edinburgh. Second edition, revised and enlarged, with plates. Edinburgh: E. and S. Livingstone. 1919. Pp. 76. 3*s.* 6*d.*

Mr. Whittaker's edition of the late Professor A. W. Hughes's "Handbook on the Nerves of the Body" belongs to the *multum in parvo* type of text-book, for it is little more than a catalogue of the peripheral and cranial nerves and sympathetic system. So far as it goes it contains a practical compendium of knowledge bearing on its subject, but the form in which this is couched makes little appeal in these days. The book is intended, we presume, for the student of pure anatomy, yet, even so, we should like him to feel that anatomical knowledge is garnered for the purpose of its subsequent practical application in practice, whereas there is a regrettable want in the book of diagrams covering the points in which anatomy and clinical practice meet. There are no illustrations, for instance, of the segmental areas of the cutaneous nerve-supply.

JOURNALS.

La Clinique Ophtalmologique, November and December, 1918, and January, 1919.—The original articles in this journal include a description of Smith's intracapsular operation for cataract extraction illustrated by some excellent plates (A. S. and L. D. Green of San Francisco), articles by two of the editors, Jocqs and Darier, on the treatment of detached retina by puncture and subconjunctival injection, an article by Varrey-Westphal describing a new apparatus for the detection of partial colour-blindness, and others, besides the usual reviews of articles from other journals, French, German, Italian, Spanish, American, and a few English.

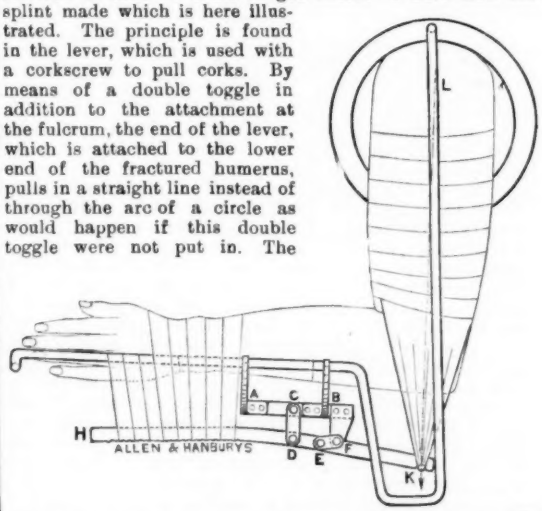
Fourth Annual Report of the Ophthalmic Hospitals and on Ophthalmic Progress in Egypt during the Years 1915-1916. By A. F. MACCALLAN, Director of Ophthalmic Hospitals. 1919. Cairo: *Ophthalmological Society of Egypt. Bulletin of 1918.*—From these reports we learn that the number of permanent ophthalmic hospitals built in Egypt during the ten years 1907 to 1917 was 13, and that there were in addition four travelling hospitals. The bulk of their work is concerned with trachoma and its sequelæ, the extent of this scourge being indicated by the fact that the proportion of the infected pupils in the primary provincial schools varied from 61 to 100 per cent.! On the other hand, the danger of infection has probably been exaggerated, for Lieutenant-Colonel J. W. Barrett stated in the discussion on Dr. MacCallan's report that from February to November, 1915, when he was consulting oculist to the Forces in Egypt, he saw only 17 cases of trachoma amongst all the troops that came under his notice, and most of them were contracted in Australia. The number of operations performed for the relief of trichiasis and entropion in one year was upwards of 26,000. Next to trachoma, the chief cause of ophthalmic disease is the gonococcus, and Dr. MacCallan has for some years been noting the relation between the activity of this organism and the rise of the temperature curve, which appears to precede it at an interval of one or two months. The commonest causes of blindness, apart from conjunctival infection, are cataract and glaucoma, the percentage of blindness due to the latter disease being as high as 13·9. The glaucoma is nearly all of the chronic form and the usual operation for it undertaken is trephining with iridectomy. Of the other papers contained in the Bulletin we may remark that in many of them the English sadly needs revision. There is one coloured plate of a case of coloboma of the choroid.

The Optician and Scientific Instrument Maker.—This weekly publication is frankly a trade journal, but contains articles of educative value to the optician dealing with the theory and practice of his calling. It also contains many articles dealing with the methods of sight-testing, and there is much controversial matter in which the claims of the sight-testing optician are championed. Into this controversy we do not propose to enter beyond pointing out that the refraction of children at any rate cannot be reliably estimated without the use of a mydriatic. We therefore regard the directions for correcting astigmatism and other refractive errors in children contained in the number for April 25th as a good deal worse than useless.

New Inventions.

A HUMERUS EXTENSION SPLINT.

THE difficulty in obtaining satisfactory extension in fracture of the humerus is well known to those who have had any large number to deal with. If the fracture is without loss of substance and without displacement it is found advisable to apply some form of extension if a perfect result is to be obtained; should there be displacement the need for extension becomes imperative; if there is displacement and loss of substance in addition—as so often happens in gunshot injuries—extension is necessary during the cleaning of the wound, even if foreshortening has to be resorted to later in order to get union. I have had the splint made which is here illustrated. The principle is found in the lever, which is used with a corkscrew to pull corks. By means of a double toggle in addition to the attachment at the fulcrum, the end of the lever, which is attached to the lower end of the fractured humerus, pulls in a straight line instead of through the arc of a circle as would happen if this double toggle were not put in. The



apparatus is attached to a Robert Jones splint. The extension apparatus is indicated by the letters. A B is an aluminium plate fixed to the under portion of the forearm section of the Jones splint, H K represents a lever attached to this plate at the fulcrum C D, the double toggle being shown as B F E. The extension is fixed to the lower part of the arm by glued stockingette and the pull takes place from the lower end of it by means of tape attached to the lever at K, the direction of the pull being L K in the exact line of the intact humerus. Extension is obtained by an elastic upward pull at H by means of rubber tubing over a vulcanite pad moulded to the lower end of the forearm or it can be attached to the sides of the Jones splint. In the sketch the extension is shown to extend far up the arm, whereas it is fixed to the lower end of the arm only, and the hand is shown in a position midway between pronation and supination, but in actual practice the hand is put up in full supination; these explanations are necessary as the drawing is done so as to be as clear diagrammatically as possible.

The splint attachment can be obtained from Messrs. Allen and Hanburys, 48, Wigmore-street, London, W.

Whitby. W. E. F. TINLEY, M.D. Durh.

THE LANCET.

LONDON: SATURDAY, JULY 5, 1919.

The Passing of the Local Government Board.

IT is with genuine feelings of regret that the older generation of medicine must witness the passing away of the Medical Department of the Local Government Board; for, owing to the fact that the Board ceased to exist on June 30th last, its powers and activities have been transferred to the new Ministry of Health. The annual reports of the medical officers of the Board embody the history of medicine in its practical and scientific aspects as applied to public health and the prevention of disease in England and Wales, and record a progress which is admitted to stand unique among the nations. Progress in public health knowledge has been largely due to the pioneer work of the Medical Department of the Board, and those who can look back on the history of sanitation through any considerable period of years will see those decades distinguished by a gradual increase in sanitary efficiency, originated or promoted by the medical servants of the Board.

Forty-eight years ago, when the Local Government Board was constituted by Act of Parliament, the knowledge of preventive medicine and public health administration was relatively small, and each advance had to be by way of experiment. It was the intention of the first medical officer of the Board, Sir JOHN SIMON, to make the Department a Ministry of Health, but, by an unfortunate decision of the President, measures for the improvement of the public health were made subordinate to the administration of the laws for the relief of the poor. SIMON was further hindered in his efforts by another decision of the President which prevented the medical officer from taking initiative action without having first received the sanction of the lay secretariat, who at that time neither understood nor appreciated the need for sanitary reform. Prior to the constitution of the Local Government Board public health legislation had been scanty and imperfect, and one of the first duties of the Department was, with the advice and assistance of the medical officer and his staff, to draw up a sanitary code for the country. But before this could be done the necessary machinery had to be provided, and for this purpose the Public Health Act of 1872 was passed, which divided the whole of England and Wales into sanitary districts, and made the appointment of medical officers of health and inspectors of nuisances compulsory in every district. This was followed by the Act of 1875, which codified and extended all the previous public health legislation. These two Acts were the foundation of real sanitary progress throughout England and Wales. At the time when the Board was created Great Britain was being ravaged by a virulent epidemic of small-pox, accompanied by great loss of life. This necessitated reform of the existing arrangements for vaccination, which was accomplished by the passing of a series of Vaccination Acts and by the inauguration of a system of inspection by the Board's medical inspectors with the view of maintaining a high standard of vaccination throughout the country. These measures did much to diminish the prevalence of small-pox, and the subsequent inquiries made by the Medical Department, which led to the removal of small-pox hospitals from London and other populous centres, had great influence in arresting the spread of the disease. We may also refer to the great campaign instituted by Sir JOHN SIMON for the abolition of filth nuisances, which were then of common occurrence, a piece of strenuous work which was instrumental in reducing the incidence and mortality resulting from enteric fever and other intestinal diseases, while it added much to the comfort and decency of life among the working classes. It had been his intention to carry out a complete sanitary survey of the country and to place the results on permanent record, but unfortunately he was only allowed to do this in piecemeal fashion. Nevertheless, the inspections made by the Board's medical inspectors were productive of great improvement in the sanitary circumstances and administration of the districts visited by them. These visits were generally welcomed by the local authorities and their officers, who were anxious to discuss local sanitary problems and obtain the advice and assistance of the Board's expert staff. But, the number of medical inspectors was totally inadequate to carry out the policy for which Sir JOHN SIMON and his successors, notably Sir GEORGE BUCHANAN, Sir RICHARD THORNE, and Sir WILLIAM POWER, were responsible. Despite repeated applications for increase of staff, this inadequacy was allowed to continue and may be said to have never been removed. In view of these various circumstances it is the more remarkable that the sanitary progress of England should have been so rapid, but towards the close of the last century the Medical Department of the Board made one of its greatest moves forward. The first essential of a scheme for the administrative control of infectious diseases is that accurate information respecting the number and nature of such cases should be supplied to the medical officer of health of the district. This involved a system of notification with all the trespass upon privacy involved therein. To meet the strong prejudices in certain quarters the Notification Act of 1889 was made adoptive, and ten years later, when the value of notification had been universally acknowledged, the measure was made compulsory throughout England and Wales by the passing of the Infectious Diseases (Notification) Extension Act, 1899. It became one of the chief duties of the Board's medical inspectors to make inquiry into the circumstances associated with outbreaks of infectious diseases, and the long series of reports on the subject forms the basis of much of our modern knowledge of the epidemiology of the indigenous infectious diseases. The Medical Department of the Board was also largely responsible for the reform in connexion with port sanitary administration which led to the abolition of the obsolete quarantine regulations and their replacement by a system of medical inspection of shipping. This system has proved an efficient safeguard against

the introduction of diseases from abroad, and has been of great value to the maritime trade of the country. To Sir RICHARD THORNE belongs the credit of having demonstrated to the representatives of other nations at various international sanitary conferences the beneficial results of this system, and the present international sanitary agreements are largely based upon the English model. To Sir ARTHUR NEWSHOLME the country largely owes its increased sense of responsibility for its childhood, while under his dispensation the prevention of tuberculosis received special attention.

It is only by the recollection of these different landmarks, and by comparison of present conditions with those existing at various points in our sanitary history, that the nature, quality, and extent of the work of the Medical Department of the Local Government Board can be adequately appreciated. It has been carried out, often in circumstances of great difficulty, and its full measure of success is even now scarcely recognised by the public. But it has proved of incalculable value to the country.

Peace and Famine.

POST-WAR conditions are in some cases even more terrible than those of war itself. Thus Lord CURZON—and General SMUTS adds: "We witness the collapse of the whole political and economic fabric of Central and Eastern Europe. Unemployment, starvation, anarchy, war, disease, and despair stalk through the land." While our public men have waited until the signature of the Peace Treaty to make these terrible facts generally known, they have long been realised by the initiated. The danger of epidemic disease has been so real to the inhabitants of the smaller European States that certain of them, though still in a state of war, sent representatives to arrange common measures of hygienic defence at a meeting held under the presidency of Dr. FERRIÈRE in Vienna. A sample or two of the findings of this International Red Cross Commission will suffice. In the Budapest Maternity Hospital, where 16,000 confinements take place annually, there were no sheets,[1] while the mattresses on which patients lay were filthy for the lack of means either to wash or to disinfect them. Dr. F. BLANCHOD, engaged in fighting typhus in Eastern Europe,[2] wrote of the entire absence of soap, linen, and medicaments, the resistance of the whole population being at the same time dangerously lowered as a result of famine and fatigue. Mr. R. KATZ, of Prague, who has recently been travelling with the Hoover Food Mission, recounts a terrible story of famine in the Erzgebirge[3]—the mountainous district between Saxony and Czecho-Slovakia. He computes that in these rural communities 90 per cent. of the children are rachitic, while hunger-œdema is so common as to be the rule.

If further proof were necessary of the physical effects of starvation on the population of Central Europe a summary is now available of RUMPEL'S address on the effect of the war on nutrition, delivered at the Hamburg Medical Society at the beginning of April. Loss of weight to the extent of 20 or more per cent. he regarded as normal. Although certain cases of gout and fatty heart might have gained some advantage, yet in many otherwise healthy people a symptom-complex developed, shown subjectively by palpitation and precordial pain increasing to attacks of pseudo-angina, objectively by diminution of the cardiac dullness, mobility of the heart on change of position, reduction of blood pressure, enteroptosis, wandering kidneys, dropping of the stomach, tendency to hernia with incarceration. Among the children, in whom during the first war-year little harm was noticeable, general weakness was now the rule, and a limitation of the stature proper to their age. To the famine known as "hunger-œdema," first described in 1917 by himself and later by VON JAKSCH, 22,000 cases had fallen victim in German Bohemia alone, with a mortality of 4 per cent. In Vienna a condition resembling osteomalacia had arisen. Tuberculosis had increased both in severity and in contagiousness. As regards illnesses in general, the length of convalescence was increased, hypersensitiveness towards remedies frequently showed itself, the blood changes included an increase in lymphocytes, with many cases of severe pernicious anæmia. Common also were gastric ulcer, the gastro-cardial symptom-complex of ROEMHELD, polyuria, enuresis, and rapid surrender to fatigue. Apart from the terrible mass of suffering involved, these observations are of great intrinsic interest.

For the relief of this general distress our Treasury has agreed to add an equal amount to funds raised by voluntary organisations. To assist them in spending wisely the important Memorandum which we print on p. 28 has been drawn up by the Committee on Accessory Food Factors appointed jointly by the Medical Research Committee and the Lister Institute. The notes have been compiled with special reference to the famine districts of Eastern Europe, and the advice set forth is based upon the present state of our knowledge of the distribution of accessory food factors in natural foodstuffs and of the rôle played by them in preventing disease and in promoting health and growth. The antineuritic or antiberi-beri factor (water-soluble B), the fat-soluble A or antirachitic factor, and the antiscorbutic factor are described, and the foodstuffs in which respectively they do or do not occur are given in a table, which provides a convenient form for reference. This table is more comprehensive than any yet published, and indicates some interesting dietetic differentiations. Over 60 foodstuffs are thus catalogued. Chemists have not been able to throw much light on the composition and character of these accessory factors, which have, so far, not been isolated in their pristine state, and up to the time of the issue of this report their presence could only be determined by experiments with animals. So far as is known, the accessory food factors cannot be produced by the animal organism, and all animals are dependent for their supply directly or indirectly upon the plant kingdom. On the plant, therefore, rests the responsibility of averting the deficiency diseases. In time of peace the variety of food consumed by European nations protects them from risk of any shortage in these essential substances. Under present conditions, however, in addition to a general shortage of food, there is also a great restriction in variety. For the sake of the populations of Central and Eastern Europe there is abundant reason for spreading quickly a knowledge of the principles set forth in this report to guide the new spirit of generosity and humanity, born in the hearts of the peoples in this great hour of common suffering and sorrow.

[1] Journal de Genève, March 22nd.
[2] Gazette de Lausanne, April 25th.
[3] Vossische Z-itung, June 5th.

Seventy Years Young.

IT is only 15 years ago that Sir WILLIAM OSLER was appointed Regius Professor of Medicine at Oxford. If his friends on both sides of the Atlantic —and no man has more, or more attached friends, most of whom feel that he is their own private crony—had not united at this moment to give him certain anniversary volumes as an expression of their affection, and by so doing revealed his birthday, no one would have credited him with three score years and ten. True he has long been before the medical public and is steeped in the wisdom of the ages; more than 20 years ago a distinguished foreigner, meeting a Johns Hopkins physician, inquired, "And how is your Osler? He must be centuries old." But he is always sympathetically of the same age as the person with whom he is talking; indeed, he often remarks when anyone's age is discussed, "Oh, he is our age." Many a true word is spoken in jest, and as a practical joker of no mean ability the Regius Professor is well able to hold his own with even the youngest of us—but that is another story.

If it is a great power, and our American and Canadian cousins certainly possess it, to get at once on good terms with strangers, it is surely a much finer talent to keep up these friendships in the way that the list of contributors to his anniversary volumes proves Sir WILLIAM OSLER can do. It is a long generation since Sir WILLIAM OSLER left Canada for the United States, but he is always acclaimed as the greatest Canadian physician. It was said on his departure from Johns Hopkins that his American colleagues deplored the loss of the man even more than that of the physician, and that this was a true saying is shown in this country by the way he has brought men together in London and Oxford, which has now become the Mecca of the United States and Canada, both socially and medically. He was obviously the proper chairman, not only for the newly instituted Fellowship of Medicine, which will welcome to London and this country generally visitors from the Dominions, America, and our Allies, but also for an efficient post-graduate scheme in London which is to cater for their professional needs. The Association of Physicians of Great Britain and Ireland was due to his inspiration, and the *Quarterly Journal of Medicine* has been brought out under his guidance since its birth in 1907. As President of the classical Association he has, like his brother Regius professor at the University of Cambridge, maintained the proper conception of the scholar-physician, equally versed in the experiences of the past, the potentialities of advancing research, and the practical steps of progress. For Sir WILLIAM OSLER has just been appointed a member of the Standing Committee to inquire into the financial needs of his University, and to advise the Government as to the application of any grants that may be made by Parliament towards meeting them. University education in the United Kingdom will thus have the advantage of his conciliatory common sense.

But in spite of all these multifarious activities no one can think of the man without recalling his love for books and their authors. As President of the Bibliographical Society, as an active curator of Bodley's library, and as a judicious collector of incunabula and other considered treasures, he has enough work to fill up the spare time of most young men. Of his favourite authors, Sir THOMAS BROWNE, MONTAIGNE, OLIVER WENDELL HOLMES, and the EGERTON YORRICK DAVISES, father, son, and grandson (a family whom it is hardly an exaggeration to say he has rescued from oblivion) he probably most closely resembles the Knight of Norwich. There are few if any medical men who can give such charming addresses, full of kindly advice and graceful humour. To read his "Æquanimitas" is a never failing remedy for bad temper Of his infinite variety there is much more to say, but this we hope to be here to do on the 100th birthday which is his by hereditary right; and in the meanwhile we may recall OLIVER WENDELL HOLMES'S prophetic dictum: "To be seventy years young is sometimes far more cheerful and hopeful than to be forty years old."

Annotations.

"Ne quid nimis."

DISABLEMENT AND ITS RELIEF.

THE evidence of Sir L. Worthington Evans, Minister of Pensions, given before the Select Committee of the House of Commons dealing with the administration of sailors' and soldiers' pensions, foreshadows timely changes in the method of dealing with disabled men. The number of pensionable men is now 720,000, nearly half of whom, it is estimated, require industrial training; only 11,000 of these men are yet undergoing training, while another 37,000 are desirous of training. The Minister referred to the transfer of the work of training disabled men to the Ministry of Labour, and indicated that the part of the work retained by the Ministry of Pensions is the training and treatment of the men so long as it is necessary for them to remain under medical care. Not only the men now being discharged from hospital will be admitted to the six or eight new residential convalescent centres soon to be established, but also the men discharged during the war who have been able to follow some employment (mostly unskilled) but still require medical treatment to make them efficient citizens. The Minister thought that these centres might usefully provide for the tuberculous "of the non-infectious type" and the relatively small number of men with extreme facial disfigurement for whom surgery could do nothing. The most economical unit for administrative purposes in the official view is 500. The first centre to be set going will be the converted filling factory at Hayes (Middlesex), where there are a number of isolated buildings convertible into dwellings and workshops served by a main building suitable for administrative purposes. As the grounds are nearly 200 acres in extent a course of agricultural training will be available. Men passed on to the industrial classes of the Ministry of Labour who break down during training will be returned to the convalescent centre. Such a centre might eventually be used as a permanent village centre occupied by the men and their families, especially tuberculous men. One cause of delay in pensions work—excessive centralisation—is to be dealt with, as already announced, by a welcome process of devolution, resulting in the establishment of 13 regions—two in Ireland, one in Scotland, one in Wales, and nine in England —each of which will be in the charge of a director who will have full powers in administrative matters. The anomalous and difficult position of the

medical referee is to be remedied by instituting Regional Appeal Boards staffed by consultants properly selected. In future the neurasthenic man, for example, will be actually seen by neurological experts, and no awards will be altered on inexpert hearsay evidence. The man dissatisfied with his award will still be able to go to his Local War Pensions Committee, who will be entitled to have the case reviewed by the Regional Appeal Board; their decision must, from the nature of the facts, obviously be final for a period. If the man's condition becomes altered he can go to the local medical referee, who will have the findings of the Regional Appeal Board before him and will be able to certify to what extent the man's present condition differs from the condition found by the board; the Local War Pensions Committee will be able to finance the man to the extent of this difference.

MONOPHAGISM, PELLAGRA, AND SCURVY.

THE theory which connects the ætiology of pellagra with maize, originated by Lombroso, has for the last ten years become the subject of renewed discussion. While on the one hand the geographical distribution of this disease is in close relationship with maize cultivation, laboratory experiments on the other hand have furnished no positive results in establishing this association. Professor G. Volpino,[1] of Bergamo, has recently investigated the subject from the point of view of anaphylaxis in pellagrous patients inoculated with extract of maize, and has shown that the injection of 1 to 2 c.cm. of watery extract of spoilt maize produces in them a distinct reaction affecting the nervous system, the skin, and intestinal functions. Sound maize had not the same effect. These phenomena, clearly anaphylactic, are caused by a super-saturation of the organism of pellagrous patients already rich in maidic substances, by a new maidic substance introduced experimentally. Other experiments in guinea-pigs confirmed this. These animals, after an exclusive diet of maize for 20 to 30 days, were inoculated with 0·5–1 c.cm. of the serum of pellagrous patients and died within 1–3 days, while control animals inoculated with serum from healthy individuals survived, as was the case also with other guinea-pigs fed on ordinary diet even if inoculated with double quantities of pellagrous serum. An exclusive diet (monophagism) is not of itself invariably harmful, especially when it forms the traditional food of the species; sometimes, however, it is not tolerated and causes pathological phenomena, as in beri-beri (Professor Volpino adds) and gout. The reasons why guinea-pigs fed exclusively on maize die are complex; the want of antineuritic and antiscorbutic vitamines is probably less important than the deficiency of grass, which is the traditional food of the species. As a result of this, the fact comes into play that the molecular grouping of the proteins of cereals are not analogous to those of herbaceous proteins, and the amino-acid content also is different. Moreover, it is probable that every kind of unsuitable diet, if persisted in, favours the entry into the circulation of a definite quantity of protein not completely split up into amino-acids, which causes, on the one hand, alimentary anaphylaxis, and on the other, the appearance in the blood of ferments destroying the proteins themselves. In monophagism, therefore, there has to be taken into consideration not only the absence of certain groups, but also the presence in excess of other groups which are toxo-sensitising. Pellagra cannot be caused by deficiency of proteins in a diet of maize, for the amount of these is enough to satisfy the requirements of human food. It is always a disease of poverty, but the specific feature is to be found in the toxic or toxo-sensitising action of its over-abundant constituents. In the same way Professor Volpino considers that in scurvy there is a process of sensitising of the organism by a diet which is too exclusive, being deficient in certain constituents and disproportionally excessive in others. The same is true also of sprue and beri-beri. Professor Volpino, in view of the toxo-sensitising factor in pellagra, is led to consider the possibility of artificially increasing the resistance of animals to an exclusive diet. His researches have shown how this can be done within certain limits and the possibility of the extension of the method to human beings. Dr. Volpino's views, which are of a highly speculative nature, will find a suitable test in their application to the prophylaxis of relapses in pellagra.

[1] Annali d' Igiene, May–September, 1918. Rome, Via Palermo, 53.

HEALTH WORK FOR THE WHITLEY COUNCILS.

ABOUT a year ago the Whitley Councils of the Potteries and Printers set up a joint health committee which sanctioned an experimental scheme for regular medical observation and research in industry. The experiment, described by Mr. E. Halford Ross in a lecture delivered on Tuesday last before the Industrial Reconstruction Council, was made in two large printing works, where the employees were informed by both their employer and the secretary of the trade-unions that a doctor would attend periodically to advise the workers on health matters. As a result many came forward and asked advice. Observations were made while work was in progress and much was done to show employees how they might work under better conditions. In addition, numerous cases of disability were discovered and remedied and the experiment was considered to have been most successful. Certain researches were done concerning fatigue, hours of work, the provision of seats, and the advantages of welfare work generally. It was discovered that the health committee of each industry is the best means of carrying out this work. Each industry differs; each has its own requirements. It is, therefore, much better for each industry to undertake its own welfare matters than to leave it entirely to any Government department. This experiment suggests that further valuable research in industrial medicine might be carried out on a larger scale under similar conditions. Sufficient work has already been done in London during the last two and a half years to indicate some of the lines along which research should be pursued. Catarrh, bronchitis, and chronic cough are the most common obvious ailments which affect the workers, and it is very rare to find a large office without somebody in it suffering from a "cold." It is quite certain that a considerable sum of money is lost in London every week owing to the reduction of output caused by these complaints, in addition to the wages paid during sickness. It might quite possibly be demonstrable by experiment that economy would

be effected if workers suffering in the early stages of catarrh were persuaded to stay at home until they recovered. Anæmia is also of frequent occurrence among the young women and girl workers, and handicaps their work greatly. Out of several hundred employees examined in three large clothing factories 63 per cent. of the girls were found suffering from anæmia. This common disease can be easily prevented if taken at once when it appears. If left until well advanced each case may require months of treatment. Its prevention is a matter of education, and a little medical advice to parents in childhood will stop much of this disabling affection. Here is a matter which an industrial medical service could take up at once, and in which, working in conjunction with the School Medical Service, it would achieve wonders in a very short space of time. Anæmia has a most distracting effect on work, and may last for years, producing far-reaching results in motherhood. Again, from work that has been carried out in connexion with munition works during the war it appears probable that improper feeding has been a considerable factor in the production of fatigue, and that the short, hurried, and scrambled midday meal, accompanied by the discomfort of waiting in queues and the curtailment of rest, has resulted in a diminution of output. These questions are for scientific study rather than for political speculation, and under the ægis of the Whitley Councils medical men might well find an opportunity for impartial observation in a sympathetic environment.

MENINGITIS IN ANTHRAX.

AT a meeting of the Société Médicale des Hôpitaux of Paris MM. Delater and Calmels reported a case of a rare complication of anthrax, namely meningitis. The patient, an American soldier, on June 14th noticed a pimple on the left cheek, which was slightly swollen. On the following day he was sent to hospital because he was feverish. On the way he vomited three times and momentarily lost consciousness. When admitted he was seriously ill. He was pale, covered with perspiration, and stuporous. The rectal temperature was 101·8° F. and the pulse 90. In the left parotid region was a "button" about 1 cm. in diameter, flat, greyish-white in the centre, surrounded by a rosy zone. The whole parotid region was œdematous, and the condition extended to the neck. There were no enlarged glands. When put to bed he at once assumed a curled-up attitude. Kernig's sign was positive and the neck was a little stiff. There were conjugate deviation of the head and eyes to the right, lateral nystagmus, and fibrillary contractions of the eyelids and lips. There was no meningeal streak. For two hours the patient remained in this state. Then general convulsions suddenly appeared and recurred every five minutes. In the intervals the patient was excited, turned in the bed, and tried to raise himself. The attacks of convulsions merged into one another, and death took place four hours after admission, just as lumbar puncture was about to be performed. It was performed immediately after death. The liquid, removed by aspiration, was rosy and turbid. To avoid error puncture was performed in several places, always with the same result. This rapid succession of meningeal phenomena during the time that the patient was in hospital rendered exact diagnosis very difficult. There was evidently a very acute infection or intoxication, and without doubt a close relation between the meningeal condition and the parotid lesion. The necropsy showed soft œdema of the parotid and cervical region extending beneath the sterno-cleido-mastoid muscle. The internal jugular vein was thrombosed. The parotid gland was slightly congested. The meninges and cerebral convolutions were covered by a network of dilated veins filled with very black blood. There were no meningeal adhesions. All the thoracic and abdominal organs were normal. The hypothesis of anthrax had not been definitely entertained because the pustule had not had time to develop. Those who saw the patient thought of a boil complicated by jugular phlebitis, with œdema of the neighbouring parts, but after the bacteriological examination they recognised that the soft and extensive œdema was best explained by the diagnosis of anthrax. This was made certain by microscopic examination of the cerebro-spinal fluid, which showed numerous, much-altered polynuclears and many Gram-positive filaments, containing spores, and free spores. The bacteria had the squat appearance with square ends characteristic of anthrax. Cultures were typical, and a guinea-pig inoculated therewith died in 40 hours with the usual symptoms and lesions.

STATE-APPLIED PHYSIOLOGY.

Mr. G. H. Roberts, the Food Controller, recently told the executive officers of food control committees that the total cost of controlling the food supply of the country worked out at about 10*d.* a year per head of the population. The Consumers' Council has since decided that this tenpenny rate is well spent, and has formally recommended the continuance of a Ministry of Food. At the Carlisle Coöperative Congress last month two resolutions were carried, the combined effect of which would be the continuance of many, if not all, of the measures taken during the war for regulating the distribution of food. A member of this congress declared that food control began two years too late and is ceasing two years too soon, and this was evidently a view which commended itself to the majority of his hearers. However insistently a large number of persons have demanded the removal of food control at the earliest possible moment, its abolition is being regarded by at least as many with apprehension. Their fears may be exaggerated, the iniquities of the food profiteer may not be as black as they have been painted. But the question does arise whether the law of supply and demand can be trusted to bring down prices rapidly and to obtain a just division of available supplies, or whether the limited amount of food likely to be put on the market in the near future will enable unscrupulous speculators to obtain monopolies which more abundant supplies would render difficult or impossible. The average citizen who dislikes the food profiteer cordially at the same time has a suspicion that the law of supply and demand must ultimately prevail against him. Nevertheless, he is anxious lest meanwhile the desire of him who has the longest purse to live luxuriously will operate to the disadvantage of those whose means are more limited.

The stringent application of the coupon system, when our supplies and our prospects of future supplies were at their worst, admittedly effected a necessary economy. It promoted and maintained a contented feeling among the population in general. Both good things. But it did more than this. It

enabled the whole nutritive problem of the country to be studied as never before by the best scientific brains, and this surely is the most cogent argument of all for the existence and maintenance of food control. It will enable the nation to retain the services of their scientific food advisers. How necessary this is the latest report of the Food (War) Committee of the Royal Society, to which we have already alluded, is sufficient evidence. This concludes with the pregnant words: "The above report shows how very inadequate is our present knowledge of the science of nutrition, and demonstrates the necessity of renewed investigations on almost every point discussed in it." Sir Auckland Geddes recently remarked that the universities, through the professors of the various faculties, had contributed more fully to victory than any other organised section of the community, and he begged men of science in future not to remain dumb at critical periods, but to come forward to help the country. It would be hard to devise a more efficient medium for the vocal help sought than such a Royal Society's committee. Professor E. H. Starling's recent Oliver-Sharpey Lectures on the Feeding of Nations: a Study in Applied Physiology, were a luminous exposition of the results which may be thus obtained. Even the most cursory study of these lectures should convince our legislators that the scientific method will and must pay. Let them only compare the debit and credit sides of the food balance-sheet. The continuation in being of an expert advisory committee at the Food Ministry will serve to build up a body of sound data from which the needs of the community may be accurately computed. Nor is this the only department outside the Ministry of Health that needs such expert advice. The fixing of a minimum wage is ardently desired. On what basis should this be founded, the cost of living, the æsthetic conditions of labour, the amenities of life, or the actual energy expended? Here is another problem which applied physiology should help to solve.

DEPOPULATION.

AN aspect of the reconstruction problem which is gravely exercising statesmen is that of the maintenance of a sufficient population to carry out any projects of reform which may be deemed necessary. Perhaps, in course of time, the National Birth-rate Commission may have some helpful recommendations to offer, and meanwhile those who wish to learn how the matter presents itself to a Frenchman may care to read a work entitled "La Natalité," written by Professor Gaston Rageot,[1] in which he discusses the economic and psychologic laws which have determined modern views as to the place of the child in the social scheme. It is his desire, he says, "to dissipate some of the illusions which envelope the problem of natality," the principal being the belief that it is a simple one which may be solved by particular measures such as the award of premiums or the grant of allowances. His statement of the position is philosophical, and he displays none of the special weakness to which debaters of this subject are prone—an inability to realise that the demolition of an opponent's argument by means of a triumphant reductio ad absurdum does not, of itself, show that one's own case is any better. A low birth-rate is, he finds, associated historically with extremes of civilisation which are themselves incompatible with the existence of the family. It is natural, he says, for human parents not to concern themselves about their children. "Ce n'est pas la nature qui protège l'enfant, mais la société." And society is for each of us only an abstraction which becomes concrete and living when it stands for "la patrie en danger." To the French mode of devolution of property, which has been held to discourage the production of large families, he attaches little importance, if only for the reason that in England freedom of testamentary capacity has not prevented a fall in the birth-rate; its effects, too, have varied—it stimulated natality under the Revolution and depresses it to-day. Summing up the various factors which he has dealt with at length he concludes that "la fausse démocratie produit le dépeuplement," but he is not without hope of better things.

[1] Paris: Ernest Flammarion.

TRAUMATIC ADDISON'S DISEASE.

THE subject of traumatic Addison's disease is discussed by Dürck,[1] who reports the following case. A hitherto healthy man, aged 48, was caught between a railway carriage and a revolving platform and had four ribs fractured. Apparent recovery took place, and he was able to resume his work in about six weeks, but a week later he had to give up owing to weakness in the arms and legs and palpitation. Bronzing of the skin of the face and hands gradually set in and the muscular weakness increased. Treatment consisted in the administration of suprarenal preparations, and death did not take place until about eight years after the accident. The autopsy showed considerable bronzing of the skin of the face, hands, forearms, and external genitals, and apparently complete absence of both suprarenals with a healed fracture of the sixth to the ninth ribs on the right side. On microscopical examination some necrotic fragments representing the remains of the medulla of the left suprarenal were found, while on the right side there was hardly any trace of the suprarenal, but remains of blood pigment indicated that a hæmorrhage had formerly taken place in this situation a long time previously. Tuberculosis could be excluded, and there was no evidence of syphilis.

[1] Aerztl. Sachverständ.-Ztg., 1919, xxv., 73-81.

A CHILD-BEARING STRIKE.

THE insertion at the front of the most recent number of the *Munich Medical Journal*, which has reached us, of a polemic against a threatened child-bearing strike in Bavaria is something of a portent. The author, Fritz Burgdörfer, a doctor of public economy holding office in Munich, begins by calling attention to the active propaganda at present being carried on in that city, directed towards a prevention of conception and an encouragement of intentional abortion, leading up to a demand for what amounts to a strike of child-bearers. This "communistic" programme, Dr. Burgdörfer tells us, assumes that the population of Germany is at present too large by 30 millions, and that since under present conditions the usual outlets in the form of exported goods or emigration are impracticable, the cry should be "No more children!" since even a wise peasant does not breed more cattle than he can feed. Largely attended public gatherings in Munich have, we learn, been instructed in the systematic use of conception-preventing apparatus, the instruments themselves being shown and their application described. Dr. Burgdörfer's reply to all this is

to quote at length Parts 1 and 2 of the 1919 Blue-book of the Bavarian Statistical Office giving the official figures for the changes in the population during the period of the war, which is over. The result is, he truly says, extremely sad. In place of the usual abundant excess of births over deaths the effect of the last five years upon the Bavarian population has been as if:

(1) One year and eight months long no marriages had taken place.
(2) Two years long no children had been conceived.
(3) Three years long double the usual number of human beings (excluding children under 5 years) had died.

The married couples in the country had not only substantially diminished in number but their average age had increased and their procreative ability was less. All in all, at the end of 1918 the baby budget showed a deficit of roughly 400,000. Applied to the pre-war German Empire as a whole, of which the Bavarian population formed one-tenth part, the profit and loss account might be so stated: 800,000 marriages not made, 4 million children unborn, 1·6 million military persons died, 700,000 civil persons died in consequence of the hunger blockade—as compared with normal times. These massive figures, Dr. Burgdörfer thinks, speak of a situation so serious that the communistic propaganda must be controverted at all costs. At the moment there are not too many children but too many adult men in Germany. A child-bearing strike would come too late and produce its maleficent results two decades hence, when they would be an anachronism. Any nation that practises a one-child system is going to its destruction. His motto is "Work, Peace, and Order," in the belief that "The greatest riches of any people consist in the people itself."

METROPOLITAN WATER-SUPPLY RESEARCHES.

THE thirteenth annual report on the results of the chemical and bacteriological examination of the London waters for the 12 months ended March 31st, 1919, was issued last week and presents some novel features, inasmuch as, arising out of the events of the war, certain important changes have been introduced in waterworks procedure. We gather from the observations of the Director of Water Examination to the Metropolitan Water Board, Sir Alexander Houston, that the new methods of water purification adopted will form the future policy of the Board. It is clear from the report that during the period of the war, and excepting temporary periods of unusual stress, the average quality of London's water-supply has been wonderfully well maintained, especially in view of the extraordinary difficulties, often of a cumulative sort, which the engineering department has had to face. Sir Alexander Houston admits, however, that it is disappointing to have to point out that for the current year the New River, East London (Lee), and Chelsea bacteriological results are the worst since the work was started under his control. The floods were responsible in the first two cases, and as regards Chelsea, the works "were asked to do too much in relation to the filtration area." The chlorination of the river waters has been continued, and this process, it is reported, succeeds considerably better than storage on the average, and is practically three times superior in its winter effects, when both the river water and the storage water give the least satisfactory results. These statements are based on the results of bacteriological examination (the *B. coli* test). The saving of coal by the adoption of the chlorination method as compared with the storage method is a very remarkable factor in the case. Chlorination further has an important deterrent effect on the development of algæ or other vegetal growths, often a source of great inconvenience and trouble to water engineers. The Staines reservoirs were affected with these growths, which showed prominently in the photographs taken of the suspended matter, but they rapidly disappeared when chlorinated river water was once more used for supply purposes. Again and again these reservoirs were, during flood-time, heavily "seeded" with growths, yet when the floods subsided and chlorinated river water was again the source of supply the growths vanished relatively quickly. It would thus seem to be the case that when chlorinated river water is stored for only a short time there is no serious risk of growths, even if from time to time a reservoir water is used which contains growths in great abundance. These water researches have obviously involved much well-directed study and the progress reported is admirable.

THE DEATH OF LORD RAYLEIGH.

THE death is announced of Lord Rayleigh, in his 78th year. Thus has passed away one who, from the boyish days of his senior-wranglership, had devoted his life, with fruitful results, to the solution of problems of fundamental importance in physical science. Director of the Cavendish Laboratory at Cambridge, where he occupied the chair of experimental physics, he was led to study the physical properties of nitrogen from various sources, with the result that he found the nitrogen of the air slightly heavier than pure nitrogen obtained by chemical means. Could such a discovery be made more fitly than in the Cavendish Laboratory? The residue which the great Cavendish obtained in 1785 after oxidising the nitrogen of the air by "sparking" proved ultimately to be the factor which caused nitrogen in Rayleigh's experiment to be heavier. It was a heavier gas mixed with the nitrogen and subsequently was isolated in a pure state and called by Ramsay, from its inertness, argon. This led to the discovery of other gases in the atmosphere, and the methods employed brought helium to light. In many other directions Lord Rayleigh carried out investigations of both scientific and practical importance. His memoirs on sound, electricity, and optics formed a series of scientific contributions much valued by the Royal Society, of which he was President in 1905. He brought about, also, valuable reforms in the teaching of science and in educational methods generally. Physical science has lost one of its most distinguished exponents by the death of Lord Rayleigh; he is succeeded in his peerage by his son, Mr. R. J. Strutt, F.R.S., who is also a leading physicist.

INDEX TO "THE LANCET," VOL. I., 1919.

THE Index and Title-page to Vol. I., 1919, which was completed with the issue of June 28th, is published in this number of THE LANCET. We are glad to be able to restore this pre-war custom, now that it is justified by a more liberal supply of paper.

ACCESSORY FACTORS IN FOOD.

THE Memorandum which follows has been drawn up by the Committee on Accessory Food Factors, appointed jointly by the Medical Research Committee and the Lister Institute, for the guidance of those engaged in administration of food relief to famine-stricken districts. It is signed by the chairman of the committee, Dr. F. Gowland Hopkins, F.R.S., and the secretary, Miss Harriette Chick, D.Sc.

Introduction.

Recent research has shown that the requirements of the human organism as regards diet cannot be met entirely by an adequate supply of protein, fat, carbohydrate, inorganic salts, and water. It has therefore modified the common belief of ten or more years ago, when the attention of physiologists was focussed upon the calorie or energy value of the diet. It is now established that, in addition to these necessary constituents, certain unidentified principles, known as accessory food factors or "vitamines," must also be present in order to maintain health and prevent the occurrence of "deficiency diseases." These substances have not so far been isolated, little is known of their chemical or physical properties, and at the present time their presence can only be detected by experiments with animals.

These accessory factors or vitamines are widely distributed among naturally occurring foodstuffs, and in time of peace, under normal conditions of food supply, the variety of food consumed by European nations protects them from risk of any deficiency in these essential substances. Under the conditions arising from the war a different state of things exists; in addition to a general shortage of food there is also a great restriction in the variety available, and danger from "deficiency diseases" is to be feared.

Of these diseases scurvy is the best known, and the belief that it is caused by some deficiency in the diet has long been strongly held. Recent research has added to the deficiency diseases beri-beri, rickets, and other less well-marked disorders of growth and departures from health.

The following notes have been compiled by the Committee on Accessory Food Factors in the hope that they may afford practical help to those occupied in the administration of food relief to the famine districts of Eastern Europe. The advice given is based upon the present state of our knowledge of the distribution of accessory food factors (vitamines) in natural foodstuffs and of the rôle played by them in preventing disease and in promoting health and growth.

Accessory Food Factors.

The accessory food factors at present recognised are three in number:—

(1) Antineuritic or antiberi-beri factor, identified with the "water-soluble B" growth factor of the American investigators.

(2) Fat-soluble A growth factor or antirachitic factor.

(3) Antiscorbutic factor.

As far as is known the accessory food factors cannot be produced by the animal organism, and all animals are dependent for their supply directly or indirectly upon the plant kingdom.

Distribution and Properties of the Accessory Factors.

1. *Antineuritic or antiberi beri factor* ("water-soluble B" growth factor of the Americans).—This vitamine prevents the occurrence of beri-beri in man and analogous diseases in animals. It is also necessary to promote satisfactory growth in young animals. It is widespread, and is found to some extent in almost all natural foodstuffs. Its principal sources are the seeds of plants and the eggs of animals, where it is deposited, apparently, as a reserve for the nutrition of the young offspring. Highly cellular organs, such as the liver and the brain, contain considerable amounts of this vitamine; flesh contains comparatively little. Yeast cells are a rich source; so also are yeast extracts—e.g., "marmite." In the case of peas, beans, and other pulses, this vitamine is distributed throughout the seed, but with cereals it is concentrated in the germ (embryo) and in the peripheral layer of the seed which in milling is peeled off with the pericarp and forms the bran.

Beri-beri is occasioned by a diet composed too exclusively of cereals from which germ and bran have been removed by milling, as in the case of polished rice or white wheat flour. The disease is common where polished rice is the staple article of diet to an almost entire exclusion of other foodstuffs. It is rare, though not unknown, where white wheat bread is eaten, because the consumption of this type of cereal food is usually accompanied by a sufficiency of other foodstuffs containing the essential principle. It is unknown where rye bread is the staple food, because in the milling of rye there is no separation of the germ.

2. *The fat-soluble A growth factor or antirachitic factor* necessary to promote growth and prevent rickets in young animals.—This vitamine appears to be necessary also to maintain health in adults, and it has been suggested that war œdema may be due to a lack of this factor in the diet. The main sources of this factor are two in number: (1) Certain fats of animal origin; (2) green leaves. The most notable deposits of this factor are in cream, butter, beef fat, fish oils (for example, cod-liver oil, whale oil), egg yolk. It is present in very small or negligible amount in lard (pig fat) and in vegetable oils, as, for example, linseed oil, olive oil, cotton-seed oil, coconut oil, palm oil; pea-nut or arachnis oil is reported to contain it in larger amount. It will be noticed that this factor is found chiefly in the more expensive fats.

While green-leaf vegetables contain the fat-soluble factor, root vegetables are deficient in it; war œdema has been frequently reported under circumstances in which root vegetables have formed a large proportion of the diet.

3. *Antiscorbutic factor.*—This vitamine is necessary in a diet for the prevention of scurvy, and is found in fresh vegetable tissues and (to a much less extent) in fresh animal tissues. Its richest sources are such vegetables as cabbages, swedes, turnips, lettuces, watercress, and such fruits as lemons, oranges, raspberries, tomatoes. Inferior in value are potatoes, carrots, French beans, scarlet runners, beetroots, mangolds, and also (contrary to popular belief) lime juice. Potatoes, although classed among the less valuable vegetables as regards antiscorbutic value, are probably responsible for the prevention of scurvy in northern countries during the winter owing to the large quantities which are regularly consumed.

Milk and meat possess a definite but low antiscorbutic value.

This vitamine suffers destruction when the fresh foodstuffs containing it are subjected to heat, drying, or other methods of preservation.

All dry foodstuffs are deficient in antiscorbutic properties; such are cereals, pulses, dried vegetables, and dried milk.

Tinned vegetables and tinned meat are also deficient in antiscorbutic principle. In case of tinned fruits the acidity of the fruit increases the stability of the vitamine, and prevents to some extent the destruction which would otherwise occur during the sterilisation by heat and the subsequent storage.

An appended table gives a summary of our knowledge as to the distribution of these three accessory factors among the commoner foodstuffs.

Practical Application of the Foregoing Facts to the Prevention of Disease.

1. *Prevention of beri-beri.*—It is unlikely that any danger of beri-beri will arise among the famine threatened districts of Eastern Europe as long as wholemeal flour from rye, wheat, barley, maize, or peas, beans, and lentils are provided. Mere shortage of food does not cause beri-beri, and poverty ensures that the whole grain is consumed for purposes of economy.

2. *Prevention and cure of rickets or growth failure in children or war œdema in adults.*—Evidence is accumulating that rickets is caused by a shortage not of fat as such, but of the "fat-soluble growth factor" which is contained in certain fats. Xerophthalmia, a severe disease of the external eye, leading, if untreated, to blindness, has also been attributed to lack of this factor. Infants and young children must therefore be supplied with the *right kind of fat*. To prevent rickets (1) full cream milk should be secured for artificially fed infants when possible; failing that, (2) full cream dried milk or (3) full cream unsweetened condensed milk. (2) is preferred to (3), and, in case of ignorant or careless mothers, even to (1), in order to prevent spread of infection and intestinal disorders. In all cases where (2) or (3) are used an extra antiscorbutic should be given (see below).

Sweetened condensed milk is undesirable for the reason that the degree of dilution required by the high sugar content renders the food, as prepared, deficient in the fat-soluble (antirachitic) factor as well as in fat and protein.

Milk and butter are the best sources of the antirachitic (or fat-soluble) factor for young and growing children;

Table showing the Distribution of the Three Accessory Factors in the Commoner Foodstuffs.

Classes of foodstuff.	Fat-soluble A or anti-rachitic factor.	Water-soluble B or anti-neuritic (anti-beri-beri) factor.	Anti-scorbutic factor.
Fats and oils.			
Butter	+ + +	0	...
Cream	+ +	0	...
Cod-liver oil	+ + +	0	...
Beef fat or suet	+ +	...	...
Pea-nut or arachis oil	+	...	...
Lard	0	...	...
Olive oil	0	...	...
Cotton-seed oil	0	...	...
Coco-nut oil	0	...	...
Coco butter	0	...	...
Linseed oil	0	...	...
Fish oil, whale oil, herring oil, &c.	+ +	...	...
Hardened fats, animal or vegetable origin	0	...	...
Margarine prepared from animal fat	(See below*)	...	...
Margarine from vegetable fats or lard	0	...	...
Nut butters	+	...	...
Meat, fish, &c.			
Lean meat (beef, mutton, &c.)	+	+	+
Liver	+ +	+ +	+
Kidneys	+ +	+	...
Heart	+ +	+	...
Brain	+	+ +	...
Sweetbreads	+	+ +	...
Fish, white	0	Very slight, if any.	...
,, fat (salmon, herring, &c.)	+ +	,,	...
,, roe	+	+ +	...
Tinned meats	?	Very slight.	0
Milk, cheese, &c.			
Milk, cow's whole, raw	+ +	+	+
,, skim ,,	0	+	+
,, dried whole	less than + +	+	less than +
,, boiled ,,	Undetermined.	+	,,
,, condensed, sweetened	+	+	,,
Cheese, whole milk	+	...	...
,, skim	0	...	...
Eggs.			
Fresh	+ +	+ + +	> 0
Dried	+ +	+ + +	> 0
Cereals, pulses, &c.			
Wheat, maize, rice, whole grain	+	+	0
,, ,, germ	+ +	+ + +	0
,, ,, bran	0	+ +	0
White wheaten flour, pure cornflour, polished rice, &c.	0	0	0
Custard powder, egg substitutes, prepared from cereal products	0	0	0
Linseed, millet	+ +	+ +	0
Dried peas, lentils, &c.	...	+ +	0
Peaflour (kilned)	...	0	0
Soy beans, haricot beans	+	+ +	0
Germinated pulses or cereals	+	+ +	+ +
Vegetables and fruits.			
Cabbage, fresh	+ +	+	+ + +
,, ,, cooked	...	+	+
,, dried	+	+	V. slight.
,, canned	...	...	,,
Swede, raw expressed juice	...	...	+ + +
Lettuce	+ +	+	+ +
Spinach (dried)	+ +	+	...
Carrots, fresh raw	+	+	+
,, dried	Very slight	...	...
Beetroot, raw, expressed juice	...	...	less than +
Potatoes, raw	+	+	...
,, cooked	...	...	+
Beans, fresh, scarlet runners, raw	...	...	+ +
Lemon juice, fresh	...	...	+ + +
,, preserved	...	...	+ +
Lime juice, fresh	...	...	+ +
,, preserved	...	...	V. slight.
Orange juice, fresh	...	...	+ + +
Raspberries	...	...	+ +
Apples	...	...	+
Bananas	+	+	V. slight.
Tomatoes (canned)	...	...	+ +
Nuts	+	+ +	...
Miscellaneous.			
Yeast, dried	...	+ + +	...
,, extract and autolysed	?	+ + +	0
Meat extract	0	0	0
Malt extract	...	+ in some specimens.	...
Beer	...	0	0

* Value in proportion to amount of animal fat contained.
V. slight = Very slight.

margarines made from animal fats are also valuable; those made from vegetable oils are to be condemned. If there is a shortage of butter it should be reserved for children, but if totally lacking the deficiency can be replaced by cod-liver oil and other fish oils or by eggs. If all animal fats are unavailable pea-nut oil should be selected in preference to other vegetable oils for preparation of margarines, &c., and some effort should be made to utilise the fat-soluble vitamine contained in green leaves.

Green leaves are a cheap and readily available source of the fat-soluble vitamine, and adults can probably maintain good health when animal fats are substituted by vegetable fats if green-leaf vegetables are consumed in fair quantity. In case of this vitamine the loss involved in ordinary cooking is not serious. Unfortunately infants or very young children cannot take green vegetables in the ordinary way, but the juices expressed from cabbages and other green-leaf vegetables, raw or even after steaming (not immersing in boiling water) for a few minutes, might be given even to infants if all other sources of this most necessary vitamine have failed.

Purées, carefully prepared from cooked spinach or lettuce, can be tolerated in small quantities (one teaspoonful daily) by many young infants, and the amount taken can be increased regularly with age.

In cases where rickets or growth failure or xerophthalmia are already well established a daily dose of cod-liver oil is essential in addition to all other procedure.

Pregnant and nursing mothers should have as liberal a supply of the fat-soluble factor as is possible. Rickets is not confined to artificially-fed children. Breast-fed children depend for an adequate supply of fat-soluble vitamine on the milk, which in turn depends upon the diet of the mother.

3. *Prevention of scurvy: use of germinated seeds.*—If fresh vegetables or fruits are scarce or absent an antiscorbutic food can be prepared by moistening any available seeds (wheat, barley, rye, peas, beans, lentils) and allowing them to germinate. It is necessary, of course, that these should be in the natural whole condition, not milled or split. The seeds should be soaked in water for 24 hours, and kept moist with access of air for 1–3 days, by which time they will have sprouted. This sprouted material possesses an antiscorbutic value equal to that of many fresh vegetables, and should be cooked in the ordinary way for as short a time as possible.

In case of shortage it should be remembered that salads are of more value than cooked vegetables. The extent to which the antiscorbutic factor is destroyed during cooking depends chiefly upon the time employed. When supplies are limited vegetables should be cooked separately and for as short a time as possible; they should not be cooked for long periods with meat in soups or stews.

Preserved foods, with a few exceptions, may be regarded as devoid of the antiscorbutic principle. Lemon juice retains some value in this respect; canned tomatoes (and presumably other tinned acid fruits) have also antiscorbutic value. *Canned vegetables are useless for prevention of scurvy, as also are dried vegetables.*

Infantile scurvy must be considered separately, as many of the above foodstuffs are unsuited to infants or young children. To avert danger all artificially nourished infants should receive an extra antiscorbutic. Cow's milk, even when raw, is not rich in the antiscorbutic vitamine; when heated, dried, or preserved, the amount contained is still further reduced. The most suitable antiscorbutic material to use is fresh orange juice, 1–3 or 4 teaspoonfuls (5–15 c.cm.) daily, according to age. Raw swede (or, if unavailable, turnip) juice is a potent antiscorbutic, and an excellent subsitute for orange juice; to obtain the juice the clean-cut surface is grated on an ordinary kitchen grater and the pulp obtained is squeezed in muslin. Tomato juice, even from canned tomatoes, and grape juice can also be used: the latter is, however, less potent than orange juice, and a larger dose should be given.

Pregnant and nursing mothers.—If babies are breast-fed it is important that the pregnant and nursing mother should receive an adequate supply of antiscorbutic food in her diet. The popular belief that green vegetables are harmful in such cases is often without foundation. Infantile scurvy is not unknown in breast-fed children.

It is evident that many of the above deficiency diseases are rife among the populations of Central and Eastern Europe. It is essential, therefore, that the principles set forth in the preceding paragraphs should be fully understood by all persons engaged in administering relief to these districts.

AN INDUSTRIAL MEDICAL SERVICE.

II.—How to Start an Industrial Medical Service.

Social organisation has always followed the lines of evolution, wherein the cell came first, then a group of cells, then a nervous system; similarly, in the social world first came the family, then the tribe, then the governed nation. New services should be allowed to evolve, and not be forced into existence on plans drawn up in some official head-quarters.

The need for an industrial medical service has been dealt with in a previous article; the present intention is to show how it can be started. Its subsequent evolution may thereafter be safely left to the future. The first point to have in mind is that a medical service to be effective should acquire the momentum of popular interest, which can only be obtained through direct touch with the personality of those it serves. This is fundamental, and its absence in the past from public health medicine is some explanation of why the average citizen has taken so little interest in the health of the community of which he is a part, although he is only too ready to discuss personal medical topics. The next point is consideration of the duties to be undertaken. These concern industrial birth, life, and death. Industrial birth is the engagement of workers; and here medical services are of great value. A medical officer acquainted with industrial processes may reject a heart case, a myope, or an incipient hernia for some processes, but safely accept them for others; as he gains more experience he will choose persons for special work according to their capacity as measured by alertness, physique, acuity of hearing or of vision; in short, he will adjust round pegs into round holes, and so do much to avoid the great economic waste of labour turnover, the result of the present method of trial and error which leaves the worker to try place after place until a congenial one is found; by thus examining each newcomer personal contact is established which should never be lost. Industrial life is the period of employment; and here skilled medical services are of even more value; to determine the existence of fatigue, the optimum hours of labour, the presence of faulty ventilation or bad lighting; to supervise the hygiene of workplaces; to arrange for dental supervision; to deal with outbreaks of epidemic disease; to advise on the provision of a canteen and its food-supply, of cloakrooms, of washing facilities, and of suitable overall clothing; to watch lost time and sickness records; to supervise closely the health of those employed on dangerous processes; to organise first-aid treatment and establish contact with outside medical treatment; to advise on compensation cases. Here personal contact should be maintained and strengthened, and the medical officer become the friend and adviser of all. Industrial death is the cessation of employment; and here the medical officer should inquire closely into the causation of dismissal or leaving so that he may ascertain where his practice is at fault; such inquiry should be for him what a post-mortem is to the physician and surgeon.

Every industry will have its own special problems; but the above short summary of the work to be done suggests where it must start—viz., in industry by the retention of whole- or part-time medical services by employers of labour. The employer will gain in the quality and quantity of output far more than the salary he pays; the worker will benefit by improved health, happiness, and earning capacity. A few employers have already taken this step; and probably more would follow if they could obtain medical men adequately trained, but there are not many who on perusing the above rough list of duties would consider themselves trained to undertake them. Two things are now needed, an increased supply of trained men and an increased demand for their services. The increased supply could rapidly be met by post-graduate courses held at medical schools in industrial areas; Birmingham, Bristol, Cardiff, Glasgow, Manchester, and Sheffield suggest themselves. Practitioners in industrial areas all suffer from lack of knowledge of how their patients earn their livelihood, and would willingly attend such courses. One group of the profession should in this matter take the initiative, both in pressing the schools to start courses and in attending the courses; we refer to the certifying factory surgeons. They already possess a recognised association and are in touch with the factories and workshops; but the duties entrusted to them, as they are aware, are wholly inadequate to the needs of industry.

The increased demand would follow almost automatically from the existence of the supply for each trained practitioner in his daily work would influence the men and their unions on the one side, and the employers and their councils on the other. Both sides would soon appreciate the value of a medical attendant with an intelligent understanding of industrial problems and ready to use his knowledge to their advantage.

Our appeal, then, is to the great provincial medical schools to start post-graduate courses in industrial medicine directed to meet the needs of the district, and so be of direct and immediate benefit to the industries among whom they exist, in the sure and certain hope that the industries in their turn will react and give greater financial support to the schools. The schools need financial support, and it is more likely to be forthcoming if the schools pay attention to the particular needs of industry and establish clearly the value industry will get in return.

MEDICINE AND THE LAW.

Treatment by Correspondence.

An inquest was recently conducted at Kensington, by Mr. A. D. Cowburn, on the body of a woman, aged 46, who died from tuberculosis and heart disease in the absence of treatment by any qualified medical man. According to the report of the proceedings in the *Times* for June 6th, it appears that until April last she had been treated by a throat specialist in Brazil, where she was then resident, and had, on coming to England, applied, through her husband, to the Alabone Institute in Highbury Quadrant, filling up a "form," and being supplied with an apparatus for spraying the throat, and with medicine. On May 31st the husband, finding that her condition was becoming very grave, wrote to the institute demanding the personal services of "the doctor who had the case in hand." On the following day it became necessary to call in a local medical man, who pronounced death imminent, as indeed it proved to be. Evidence as to the pathological conditions found post mortem was given by Dr. B. H. Spilsbury, who is reported to have said that, had proper treatment been given, life would have been prolonged. The husband of the dead woman having declared that he was under the impression that the "doctor at the institute was a qualified man," the coroner stated that he intended to call the attention of the proper authorities to the matter. It appears certain that in this case the inadequacy, at least, of "treatment by correspondence" for one in so grave a state of health, was not appreciated by those on whom the responsibility for her welfare devolved; but the husband evidently believed that the treatment he procured his wife was legitimate, and conducted by a qualified medical man in a proper manner, though in absentia. Any action that may be taken by the authorities will probably be conditioned by the strength of the evidence available that the husband had grounds extended to him for this belief: but it may be that, even if such evidence be not forthcoming, there is yet sufficient basis for action by the Society of Apothecaries, which society, it will be remembered, has the right to sue for penalties against persons practising as apothecaries without its licence. The practice of an apothecary consists, it is usually held, in attending and advising persons requiring *medical* treatment, and in prescribing, compounding, and supplying medicine for their cure and relief. Bone-setters and others of that ilk do not therefore expose themselves to the liability of such action. But it is clear that, in the interests of others who may be misled from one reason or another, the activities of the Alabone Institute call for close attention.

The Dispensing of Prescriptions at Night.

At a recent inquest at Deptford it was proved that an insured person who had received a prescription at eight in the evening could not obtain the medicine till the following day because the druggists available would not dispense after that hour. In the view of the medical man who gave the prescription, the life of the patient, who died, might have been saved if he could have obtained the prescription at once. He stated that similar cases were happening every

day. The coroner expressed the opinion that in urgent cases druggists should be compelled to dispense at any hour of the day and night, and that the matter should be brought to the attention of the Insurance Committee. This, he was informed, had already been done without result. It would certainly appear to be useless for medical practitioners to be compelled, by public opinion if not by law, to attend patients at all hours—often for illness which is not serious or urgent—when in cases of genuine urgency the effort of the medical man is frustrated by the closing of the druggist's shop. It is for the public to bring about the remedy in their own interests.

The Proof of Paternity.

In a recent trial before Mr. Justice Darling a man indicted under the Punishment of Incest Act, 1908, raised the defence that the girl with whom, according to the evidence, he had had sexual intercourse, was not in fact his daughter. She had been born two months after the prisoner married her mother, but he denied that he had had, or could have had, access to the mother at the time when the child must have been begotten. The law presumes a child born in wedlock to be the legitimate offspring of the marriage, and when the Punishment of Incest Act was framed, in order to prevent intercourse between persons closely related in blood, the position of those connected only by a legal presumption was possibly forgotten in the drafting. Mr. Justice Darling, while referring to authorities of great weight against the course which he took, relied upon the Poulett peerage case as enabling the presumption of legitimacy to be rebutted. He therefore left it to the jury to say whether the girl was the daughter of the prisoner by blood or not, and told them that it was their duty to acquit him if they were satisfied that she was not his daughter in the sense indicated. The prisoner was found not guilty and discharged. Defences of this kind will probably be heard of again at similar trials, and it is to be hoped that they may not lead to undeserved acquittals.

Professional Secrecy in the Eye of the Law.

An interesting statement was made by the presiding judge during the hearing at the last Worcester Assizes of a case of concealment of birth. One of the witnesses, a medical man, was called in when the girl was prostrate, and after she had placed the body of the baby under the mattress. He said he had to perform an operation to save her life. The judge said he saw that the doctor in his depositions had stated that though he knew the child had been born, he did not think it his duty to inform the police, as it would have been a gross breach of professional confidence. The judge said there was no professional confidence in criminal cases, and it was the doctor's duty to inform the police. He did not blame the doctor for his view, but he thought it should be known that his view was wrong, as was that of the Association which advised him. The judge added that if a patient cut another person's throat it would be the doctor's duty to inform the police. There was no difference between these cases. In the result the girl was found not guilty. The question thus raised is, of course, not new and its solution is not easy. It has been frequently discussed, and an able exposition of the whole subject was given by the late Dr. A. G. Bateman, the Secretary of the Medical Defence Union, in a paper which, with a report of an interesting debate, is to be found in the Transactions of the Medico-Legal Society for 1904–05. It would appear that the dictum of the learned judge presiding at the recent Worcester Assizes is in absolute accord with the strict letter of the law. It is equally clear that the judge did not consider that, in this case, there had been any but a technical breach committed by the doctor. His actions were fully in accord with the paramount professional opinion which finds it repugnant to assume the office of informer, when knowledge of the indictable offence is obtained in the exercise of professional capacity. This opinion is clearly set out in our columns this week by Sir John Tweedy, President of the Medical Defence Union. Nevertheless, it is well that the letter of the law should be known, and that the responsibility for non-compliance, under certain circumstances, should be realised. A medical man in the exercise of his professional vocation has special opportunities for becoming aware of the commission of offences against the law, and special confidence is reposed in him. The law, however, while casting upon him no special duty, does not extend to him the special privilege that it does to lawyers, who are exempted from disclosure of "professional secrets," even when these relate to the commission of criminal offences.

An Action for Negligence.

Two consolidated actions of medical interest were recently heard before the Lord Chief Justice and a special jury. Mr. W. A. Bowring sued Mr. M. L. Cook to recover the professional charges for performing an operation on Mrs. Cook. Mr. and Mrs. Cook sued Mr. Bowring for damages for negligence in the operation and in the medical treatment of Mrs. Cook. Mr. Bowring's counsel, after referring to his client's qualifications, gave a brief review of the case. The plaintiff, he said, was consulted by Mr. Cook in January, 1917, about his wife's condition, and made an examination as a result of which he diagnosed the case as one of fibroid tumour incarcerated in the pelvis and advised an operation for the removal of the tumour. For the defence it was alleged that the plaintiff had advised that Mrs. Cook was not pregnant, when, in fact, she was, and that he had not completed the operation which he had advised. To these allegations the plaintiff replied that he had stated that it was doubtful whether Mrs. Cook was pregnant, and that the question of pregnancy did not affect the decision to operate. In desisting from operating he had acted in accordance with the condition of Mrs. Cook as revealed by the abdominal section. Afterwards, and as a result of his treatment, the fibroid growth in the uterus subsided, and Mrs. Cook regained her health. The jury, after two minutes' deliberation, found for the plaintiff, and judgment was entered accordingly, both on the claim and counterclaim. It seems clear that Mr. Bowring, the plaintiff in this case, acted throughout in a proper manner, and in accord with the justifiable opinions formed by him at different stages during the progress of the case. It would be intolerable for a surgeon who, during an operation, finds evidence that satisfies him that a contemplated procedure should not be carried out, nevertheless, under penalty of being cast in damages, to be forced to complete the operation "contracted for" (if the phrase be permissible) or to forego his proper fees. Mr. Bowring is to be congratulated on the swift decision of the jury in establishing an important principle.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Second Wave of Influenza.

SINCE the first weeks of April the presence of a second wave of influenza has been manifest in Victoria. The hospital accommodation has again been severely taxed, and the disease has been more widespread in the community than before. The increase has been very marked as a result of the Easter vacation, with its overcrowding in trains and public amusements. The restrictions in force during the last epidemic were not reimposed by the Government. The Minister of Health (Mr. Bowser) was last week announced to be suffering from overstrain, and the Hon. Mr. McWhae has been appointed acting Minister. It had been generally felt that a stronger policy was required at the Health Department, and there had been some slight friction with the Medical Advisory Committee on account of certain suggestions being shelved. It is understood that the new policy will include a special medical officer, with full discretion to manage the hospital equipment and general direction of the handling of a special organisation, apart from the routine of the Board of Health. As is not unusual, the emergency hospital accommodation has proved unsatisfactory and inadequate, but the chief difficulty is stated to be the shortage of nurses. Up to the end of April there had been about 1500 deaths from influenza in Victoria. In Sydney the disease became markedly epidemic early in April. Restrictions were at once imposed, including the prohibition of all public gatherings and the compulsory wearing of masks. The course and severity of the outbreak appear to have been much the same as in Victoria. About 700 deaths have so far occurred in New South Wales.

It is impossible to say what effect the restrictions have had. Probably they have in some degree mitigated the extent of the outbreak, but at the same there have been other evils apparent as the result of these regulations which

may have outweighed their possible good effects. Commerce has been dislocated, and much hardship has resulted from loss of employment. The coal trade has been paralysed by conflicting quarantine authorities, and the occasion has been seized upon by the seamen to demand extra wages and insurance against influenza. No definite conclusion has been reached as to the value of inoculation or masks, but the most pregnant comment on these precautions is that the public has ceased to ask for them. The Federal Director-General of Quarantine, Dr. Cumpston, has published an analysis of some 2000 cases in the quarantine hospitals. In the meantime the Federal department continues to issue the vaccine.

During the past week the disease has appeared in epidemic form in Queensland and South Australia, but so far not severely.

The Legality of Mask-wearing.

During the period of compulsory mask-wearing in Sydney in January, Dr. Fox, a city practitioner, refused to adopt a mask on the score that it was unhealthy. Dr. Fox was arrested and appeared before a magistrate, by whom he was committed for trial before a higher court. The State Attorney-General has decided not to prosecute, but Dr. Fox is not satisfied with this attitude, and intends to proceed against the authorities for damages.

Curious Case of Snake-bite.

A remarkable happening is reported from the Riverina. A resident of a riverside town caught a large specimen of a Murray cod, and on opening the fish discovered a live snake, by which he was bitten in the attempt to withdraw it. He was treated by a companion with a first-aid outfit and subsequently by a medical man, and suffered no further ill-result.

Lodge Dispute in Victoria.

The dispute between the Friendly Societies and the Victoria branch of the British Medical Association which has been running on since last year is still unsettled. About half of the societies have agreed to accept the Association's model agreement, but some of the others decline to come in. Meanwhile the former lodge doctors appear quite satisfied with the position, which is that they are paid by the lodge for each visit. It is said that this results in far less work than formerly, and that the remuneration is better. The Orders which stand out are hoping that, the war being over, there will be a supply of men willing to take institute places in spite of the Association's refusal to recognise institutes.

May 6th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Calcutta University Medical Schools.

THE Senate of the Calcutta University has approved of the affiliation of the Carmichael Medical College, Belgechia, to the final M.B. standard. This is the second medical college in Calcutta to affiliate.

Plague, Cholera, Small-pox, Hookworm.

The last weekly report issued shows the mortality from plague in India as 2417 deaths against 3047 seizures. In the Bombay Presidency there were 178 deaths; in Madras, 7; in Bengal, 23; in Bihar and Orissa, 320; in the United Provinces, 706; in the Punjab, 1029; in Burma, 63; in the Central Provinces, 32; and in Mysore, 21.

By last mail a serious outbreak of cholera among the employees of the Calcutta Telegraph Office is reported. About 115 telegraphists, clerks, and messengers, including 82 Europeans and Anglo-Indians and 30 Indians, have been attacked.

There has been a considerable increase of small-pox on the Kolar goldfield during the past month, as compared with any previous month since the present outbreak. There were 100 attacks and 30 deaths, bringing the total to 275 attacks and 88 deaths since July 1st, 1918. There was a recrudescence of plague during April, after a month of immunity, and cholera has also reappeared.

Dr. J. Borland McVail, Deputy Sanitary Commissioner, has opened a laboratory at one of the Bengal mills for the investigation and treatment of ankylostomiasis among jute mill employees. So far as has been shown to date, in spite of the excellent sanitary arrangements provided in the mills, more than 50 per cent. of the coolies are infected with hookworm disease. The treatment is being carried out by the medical staff of the mills with the advice and help of Dr. McVail and his staff.

Town Planning at Lucknow.

The Lucknow Municipal Board has resolved to guarantee the payment of the charges of a town-planning expert to enable the Lucknow Improvement Committee to secure this gentleman's return to India and his advice on the details of the various improvement schemes during next cold weather.

Trooping during the Hot Weather: Educational Distractions.

An official communiqué published in India states that some 20,000 British troops of the post-war Army are now being prepared in England for service in India. It is expected that their despatch will commence in June. It has long been recognised that during the Indian summer boredom has much to do in producing a mental and physical condition which tends to the development of disease, and steps are being taken during this hot weather to prevent the ennui and lack of interest which has been so often the curse of the soldiers' life. It has been arranged that soldiers shall be afforded interesting and congenial occupation in their leisure hours. The Commander-in-Chief is anxious that soldiers should be given opportunities for improving their general education and knowledge and, where facilities can be provided, for learning or practising a trade. The aid of local educational authorities has been freely drawn on and instruction in a large number of subjects has been arranged. The War Office, at the instance of the Government of India, has made a grant of £10,000 in aid of this educational scheme. The Government of India have also arranged to provide free passages for soldiers to and from any place in India at which they wish to spend their furlough. Last year the Government spent half a lakh on making the various homes established more comfortable for the men, and gave another half lakh to the Y.M.C.A. for a similar purpose.

Red Cross Supplies for the Afghan Campaign.

The Joint War Committee has made very complete arrangements in connexion with Red Cross supplies on the North-West Frontier for the Afghanistan campaign. Main depôts have been established at Peshawar, Rawalpindi, Kohat, Bannee, and Quetta, with Red Cross commissioners in charge of each.

New Nursing Home.

The Bengal branch of the Lady Minto Indian Nursing Association opened a nursing home at Salt Hill, Darjeeling, on May 1st. The home is chiefly for maternity cases, but other suitable non-infectious cases will be admitted.

June 4th.

URBAN VITAL STATISTICS.

(Week ended June 28th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10·6, 9·9, and 10·0 per 1000 in the three preceding weeks, declined to 9·6 per 1000. In London, with a population slightly exceeding 4,000,000 persons the annual rate was 9·0, or 0·9 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·4 in West Hartlepool, 3·5 in Eastbourne, and 4·3 in Wallasey, to 15·7 in Wigan, 17·2 in Hastings, and 20·1 in Stockton-on-Tees. The principal epidemic diseases caused 133 deaths, which corresponded to an annual rate of 0·4 per 1000, and included 44 from diphtheria, 33 from measles, 31 from infantile diarrhœa, 17 from whooping-cough, and 8 from scarlet fever. Measles caused a death-rate of 1·6 in Newcastle-on-Tyne and 2·7 in Stockton-on-Tees. There were 2 cases of small-pox, 1143 of scarlet fever, and 1030 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3, 1115, and 1085 respectively at the end of the previous week. The causes of 32 deaths in the 96 towns were uncertified, and included 3 each in Birmingham, Leicester, and Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 12·3, 12·4, and 11·0 in the three preceding weeks, rose to 11·5 per 1000. The 249 deaths in Glasgow corresponded to an annual rate of 11·6 per 1000, and included 12 from measles, 11 from whooping-cough, and 1 each from scarlet fever, infantile diarrhœa, and typhus. The 83 deaths in Edinburgh were equal to a rate of 12·9 per 1000, and included a fatal case of diphtheria.

Irish Towns.—The 107 deaths in Dublin corresponded to an annual rate of 13·8, or 1·5 per 1000 below that recorded in the previous week, and included 3 from measles and 1 each from scarlet fever and whooping-cough. The 98 deaths in Belfast were equal to a rate of 12·7 per 1000, and included 3 from scarlet fever and 1 each from diphtheria and infantile diarrhœa.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING

April 30th, 1918.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester	61	0·18	3·33	6·10	3·62	6·62	19·85	1·83	0·62	0·22
London—										
Meteorological Office	85	0·18	2·16	3·48	3·40	7·82	17·04	2·21	1·20	0·42
Embankment Gardens	47	0·12	1·73	2·74	4·87	6·53	15·99	3 73	0·81	0·28
Finsbury Park	18	0·10	1·99	12·48	0 90	4·10	19·56	0·76	0·33	0·02
Ravenscourt Park	22	0·06	2·27	5 50	0·80	1·49	10·11	0·89	0·21	0·07
Southwark Park	59	0·09	1·94	5·46	3 20	5·67	16·36	3·54	0·84	0·13
Victoria Park ...	40	0·01	0·77	3·72	0·76	2·34	7·59	1·30	0·26	0·08
Wandsworth Com.	20	Tr.	0·27	1·40	0·77	1·72	4·15	0·93	0·32	0·04
Golden Lane ...	76	0·27	4·47	4·71	3·33	5·45	18·24	2·68	1·48	0·45
Malvern*	—	—	—	—	—	—	—	—	—	—
Manchester—										
Queen's Park ...	55	—	—	—	—	—	6·50	—	—	—
School of Technology	40	—	—	—	—	—	12·70	—	..	—
Newcastle-on-Tyne	31	0·18	4·23	7·71	1·50	2·87	16·48	1·42	0·44	0·15
Rochdale	—	—	—	—	—	—	34·80	—	—	—
St. Helens	30	0·36	1·67	3·58	1·63	3·48	10·72	1·83	0·83	0·22
Southport—										
Hesketh Park ...	27	0·00	0·21	0·36	0 54	2·17	3·28	0·91	0·19	0·04
Woodvale Moss...	26	—	—	—	—	—	4·02	—	—	—
SCOTLAND.										
Coatbridge	14	0·06	0·87	2·68	1·08	1·96	6·64	1·18	0·08	0·08
Glasgow—										
Alexandra Park...	10	0·10	2·50	5·17	0·46	0.61	8·84	0·42	0·06	0·04
Bellahouston Park	13	0·01	0·97	2·59	0·33	0·37	4·27	0·27	0·06	0·01
Blythswood-sq. ...	16	0·11	2·56	2·98	0·43	0·70	6·78	0·56	0·09	0·04
Botanic Gardens	12	0·08	1·34	3·76	0·27	0·78	6·23	0·39	0·05	0·02
Richmond Park...	10	0·03	1·12	2·92	0·24	0·31	4 62	0·21	0·03	0·02
Ruchill Park ...	12	0·10	3·51	1·63	0·25	0·65	6·14	0·41	0·06	0 03
South Side Park.	10	0·01	0·72	2·72	0·12	0·30	3·87	0·21	0 06	0·01
Tollcross Park ...	11	0·11	2·02	5·25	0·28	0·67	8·33	0·42	0·06	0·04
Victoria Park ...	11	0·02	0·85	2·90	0·20	0 39	4·36	0·28	0·06	0 02

May 31st, 1918.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	40	0·11	3·88	4·43	1·58	5·81	15·81	1·49	0·68	0·22
Embankment Gardens	34	0·11	2·20	3·49	2·31	4·14	12·24	2·04	0·64	0 10
Finsbury Park ...	61	0·12	2·79	14·46	1·22	3·40	22·01	1·63	0·42	0·12
Ravenscourt Park	36	0·16	2·90	9·83	1·88	2·37	17·14	1·33	0·28	0 14
Southwark Park...	35	0·05	0 63	2·45	2·02	3·59	8·74	2·22	0·48	0·12
Victoria Park ...	68	0·08	3·91	15·71	1·35	3 35	24·39	1·93	0·43	0·19
Wandsworth Com.	20	0·00	1·30	7·83	0·01	2·14	11·27	0·85	0·24	0·04
Golden Lane ...	67	0·11	3·45	4·88	1·88	3·77	14·08	1 85	0·86	0·24
Malvern*...	—	—	—	—	—	—	—	—	—	—
Manchester—										
Queen's Park ...	73	—	—	—	—	—	14·10	—	—	—
School of Technology	83	—	—	—	—	—	16·60	—	—	—
Newcastle-on-Tyne	35	0·28	3·19	8·83	1·89	2·31	16·50	1·56	0·36	0·13
Rochdale	—	—	—	—	—	—	34·80	—	—	—
St. Helens	93	0·49	3·39	6·13	3·05	6·05	19·09	3·00	1·91	0·46
Southport—										
Hesketh Park ...	77	0·02	0·49	0·96	1·53	4 40	7·40	1·80	0·31	0·07
Woodvale Moss...	89	—	—	—	—	—	7·51	—	—	—
SCOTLAND.										
Coatbridge	40	0·16	2·11	6·00	2·07	3·78	14·12	2 24	0·17	0·12
Glasgow—										
Alexandra Park...	40	0·11	2·52	5·21	1·86	1·54	11·24	0·83	0·07	0·10
Bellahouston Park	63	0·12	1·58	5·99	2·32	4·78	14·79	2·17	0·19	0·06
Blythswood-sq. ...	56	0·09	1·32	5·16	2·83	2·47	11·87	1·14	0·14	0·14
Botanic Gardens	63	0·39	2·12	5·85	7·89	2·53	18·78	1·64	0·16	0·05
Richmond Park...	56	0·16	1·75	3·76	1·70	3·43	10·80	1·73	0·18	0·15
Ruchill Park ...	59	0·40	2·61	7·03	2·46	2·84	15·34	1·45	0·19	0·09
South Side Park..	65	0·32	2·24	5·47	2·16	5·26	15·45	2·32	0·15	0·08
Tollcross Park ...	50	0·19	1·31	3·55	4·63	3·47	13·15	1·39	0·14	0·12
Victoria Park ...	65	0·05	1·57	5·18	5·28	3 95	16·03	2·02	0·12	0·08

Tr. = trace. * Observations suspended owing to war conditions.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9 lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg.-Lieut. W. P. Starforth, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

ARMY MEDICAL SERVICE.

Col. Sir W. H. Horrocks, K.C.M.G., C.B. (retired pay), to be temporary Director of Hygiene at the War Office, and to be temporary Brigadier-General whilst so employed.

Col. J. Fallon retires on retired pay.

Major and Bt. Lieut.-Col. C. W. Holden, D.S.O., relinquishes the acting rank of Colonel on re-posting.

Major and Bt. Lieut.-Col. W. C. Smales, D.S.O., R.A.M.C., from Deputy Assistant Director-General, to be Assistant Director of Hygiene at the War Office.

Major-Gen. Sir W. B. Leishman, K.C.M.G., C.B., F.R.S., K.H.P., to be Director of Pathology at the War Office.

Lieut.-Col. D. Harvey, C.M.G., C.B.E., R.A.M.C., to be Deputy Director of Pathology at the War Office, and to be temporary Colonel whilst so employed.

Major A. C. H. Gray, O.B.E., R.A.M.C., to be Assistant Director of Pathology at the War Office, and to be temporary Lieutenant-Colonel whilst so employed.

Temp. Col. T. P. Legg, C.M.G., relinquishes his commission and retains the rank of Colonel.

The undermentioned Temporary Colonels relinquish their temporary commissions on re-posting: H. G. Barling, C.B. (Lieut.-Col., R.A.M.C., T.F.), J. Swain, C.B. (Major, R.A.M.C., T.F.).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels relinquishing the temporary rank of Colonel on re-posting: F. J. Brakenridge, J. S. Gallie, G. J. Houghton, H. E. M. Douglas, W. Bennett.

The undermentioned relinquish the acting rank of Colonel on re-posting: Capt. and Bt. Major W. G. Wright; Lieut.-Cols. F. McLennan, H. C. R. Hime.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Maj. and Bt. Lieut.-Col. J. G. Bell; Majors D. P. Watson, T. H. Scott, E. C. Phelan, W. Egan, D. L. Harding, W. C. Nimmo, C. Bramhall, T. S. Blackwell, B. Johnson, G. F. Rudkin, J. J. O'Keefe; Capts. C. M. Drew, J. W. C. Stubbs, R. B. Price, J. H. Fletcher, C. Heim, F. Worthington, E. Phillips, R. Hemphill, W. J. Dunn, R. R. Thompson, L. F. K. Way, E. W. Vaughan, H. C. D. Rankin; Temp. Capt. W. E. Hallinan.

To be acting Lieutenant-Colonels whilst commanding Medical Units: Majors R. N. Hunt, J. A. W. Webster, N. E. Dunkerton, Capt. (acting Major) W. W. MacNaught.

Lieut.-Col. G. A. T. Bray, D.S.O., is placed on retired pay.

Major W. W. Boyce, D.S.O., relinquishes the acting rank of Lieutenant-Colonel on re-posting.

To be acting Majors: Capt. and Bt. Major A. Shepherd, S. W. Kyle; Capt. T. J. L. Thompson; Temp. Capts. A. T. W. Forrester, R. H. Stevens, L. T. Giles, E. J. Pehill, J. R. Griffith, H. Findlay, R. S. Woods, J. M. Morris (whilst specially employed); Temp. Lieut. J. E. G. Calverley.

The undermentioned relinquish the acting rank of Major: Capt. and Bt. Major W. L. Webster; Capts. R. C. Aitchison, G. P. Kidd, W. J. Knight, T. J. L. Thompson, F. R. S. Shaw, D. H. C. McArthur, A. L. Stevenson, R. H. Williams, J. H. Baird, R. W. Vint, T. D. Inch, J. A. Renshaw, F. C. Chandler; Temp. Capts. J. R. M. Whigham, T. Ferguson, W. F. Morgan, R. J. B. Madden, G. B. McTavish, A. R. Esler, E. F. C. Dowding, H. J. Pickering, F. J. O. King, A. J. Dunlop, G. C. Linder, C. L. Chalk, R. B. Blair, H. B. Shepherd, F. H. Moxon, G. S. Brown, J. Rodger, E. G. Dingley, T. H. Oliver, J. W. Littlejohn, R. C. Cooke, J. L. Jackson, G. S. Murray, W. C. Horton, G. B. Elliott, W. H. Peacock, H. G. Frean, A. V. Craig, E. F. G. Ward, F. W. Diamond, C. Burnham, P. J. Chissell, J. S. Hall, T. Stordy, H. E. Gamlen, F. H. Young, G. H. Culverwell, W. K. McIntyre, J. L. A. Grout; Lieut (temp. Capt.) G. E. Spicer.

Late temporary Captains to be Captain: E. E. Frazer, F. Wheeler.

The undermentioned Captains resign their commissions: J. A. Andrews, J. A. W. Ebden.

Temporary Lieutenants to be temporary Captains: L. W. Oliver, T. C. A. Sweetman.

Officers relinquishing their commissions: Temporary Lieutenant-Colonels, and retaining the rank of Lieutenant-Colonel: G. N. Stephen, G. A. Bannatyne. Temporary Major: A. F. Hurst (granted the rank of Lieutenant-Colonel). Temporary Majors retaining the rank of Major: J. G. Fitzgerald, H. S. Brander, E. F. Ackery, G. S. Samuelson, A. Robertson, C. Christy. Temporary Captains granted the rank of Major: J. B. Lowe, L. H. C. Birkbeck, J. V. Holmes, W. Haward, E. G. D. Pineo, (Acting Major) G. S. Mill, W. E. Hallinan. Temporary Captains retaining the rank of Captain: H. B. Pare, W. A.

Paterson, W. A. Rees, R. W. L. Wallace, P. O. W. Browne, W. B. Primrose, A. M. Hewat, C. G. G. Winter, A. R. F. Douglas, R. C. B. Briscoe, D. B. Leitch, W. M. McFarlane, J. Rigby, P. C. Bushnell, H. R. Wright, A. Mudie, T. G. Fetherstonhaugh, A. Farquhar, R. de V. King, A. E. Francis, E. Gardiner, J. A. Loughridge, G. S. Murray, A. A. Lees, A. M. Bayne, F. M. Auld, A. P. Ford, D. Gray, W. W. Turner, H. E. Collier, E. R. Lyth, A. H. M. Saward, L. G. Leonard, S. A. Tucker, D. W. Tacey, H. H. P. Morton, G. P. Taylor, I. M. Frazer, G. A. Ticehurst, H. S. McSorley, C. S. Stolterfoth, G. Scullard, G. B. Messenger, G. B. Crawford, W. M. Johnston, C. W. Ewing, H. Findlay, J. S. Dickson, C. O. Donovan, M. C. R. Grahame, A. T. I. Macsonald, G. R. Potter, W. Henderson, T. N. Darling, W. E. Cooper, C. C. G. Gibson, N. P. Pritchard, A. Campbell, L. Gibbons, A. W. Cochrane, G. Hamilton, E. V. Hunter, H. R. W. Husbands, A. C. Giles, L. L. Hadley, C. C. B. Gilmour, D. Hardie, C. A. Joll, A. G. K. Ledger, A. J. Andrew, J. S. Taylor, D. A. Donald, J. W. Lindsay, J. O. Thomas, H. Rogers-Tillstone, J. A. Renshaw, R. Kenefick, H. V. Taylor, F. C. Trapnell, K. H. Bennett, W. A. Murphy, A. E. Hallinan, B. D. Crichton, J. L. H. Paterson, V. D. O. Logan, T. Kirkwood, E. A. Donaldson-Sim, W. J. G. Johnson, H. A. Cutler, E. H. Jones, R. Calleya, W. H. Gowans, H. E. Clutterbuck, I. Feldman, W. H. Brown, W. J. G. Henderson, J. C. Bramwell, R. B. Hergate, D. S. Harvey, D. Johnston, L. W. Oliver, A. Walker, G. B. Mason, J. B. Cook, H. L. Cronk, C. Clyne, H. R. Tighe, S. G. Harrison, S. A. Day, R. M. Moore, E. P. Dark, H. C. Harrison. Temporary Lieutenants retaining the rank of Lieutenant: W. Hickey, W. F. Waugh, B. W. Lacey, R. C. Redman, H. L. Parker. Temp. Hon. Lieut. F. A. Georger retains the rank of Honorary Lieutenant.

GENERAL RESERVE OF OFFICERS.

Major A. F. Heaton relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Convalescent Depôt.

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Lieutenant-Colonel on reposting: W. M. Dickson, E. T. Burke.

Captains relinquishing the acting rank of Major: J. G. Ronaldson, A. F. L. Shields, W. Barclay, R. Taylor, A. R. Hill, C. R. McIntosh, P. Thornton, J. Le M. Kneebone, J. B. Cavenagh, G. G. Alderson, W. M. Biden, A. Winfield, J. B. Scott.

Captains to be acting Majors: H. Rollinson, T. Hampson.

Captains relinquishing their commissions and retaining the rank of Captain: I. D. Suttie, J. M. Courtney, R. H. Scott.

TERRITORIAL FORCE.

Officers relinquishing their acting rank on ceasing to be specially employed: Capts. (acting Lieut.-Cols.) H. G. G. Mackenzie, J. W. Craven, W. Simpson; Capts. (acting Majors) G. P. D. Hawker, H. A. Playfair-Robertson, R. W. Swayne, R. C. S. Smith, H. B. Sproat, H. M. Fort, G. Young, J. C. Marklove, A. M. Mackay, W. L. Cockcroft, G. E. Nash, T. Graham, N. H. H. Haskins, J. C. Denvir.

Capt. N. C. Rutherford relinquishes his commission.

Capt. D. W. C. Jones is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

Capt. C. C. Fitzgerald is restored to the establishment.

Captains to be acting Majors whilst specially employed: T. S. Worboys, N. J. Wigram, T. W. S. Paterson.

1st Eastern General Hospital: Capt. J. F. Gaskell is restored to the establishment.

1st Southern General Hospital: Capt. F. D. Marsh is restored to the establishment.

3rd Southern General Hospital: Major E. C. M. Foster is restored to the establishment.

5th Southern General Hospital: Major W. P. Purvis is restored to the establishment. Capt. (acting Major) G. H. Cowen relinquishes his acting rank on ceasing to be specially employed, and is restored to the establishment.

5th London General Hospital: Capt. (acting Major) E. M. Corner relinquishes his acting rank on ceasing to be specially employed.

3rd Western General Hospital: Major (acting Lieut.-Col.) W. M. Stevens relinquishes his acting rank on ceasing to be specially employed.

2nd Northern General Hospital: Major (acting Lieut.-Col.) W. Thompson relinquishes his acting rank on ceasing to be specially employed.

ROYAL AIR FORCE.

Medical Branch.—Lieut. G. A. S. Madgwick is transferred to Unemployed List.

Dental Branch.—Lieut. H. H. Chapman is transferred to Unemployed List.

AGE OF RETIREMENT IN THE I.M.S.

In accordance with a recent Royal Warrant the ages at which officers of the Indian Medical Service holding administrative appointments shall be placed on the Retired List are now as follows: Director-General 60, instead of 62; Colonels, Brevet Colonels, and general officers 57, instead of 60. The age at which Lieutenant-Colonels and Majors shall be placed on the Retired List will remain unaltered at 55.

DEATHS IN THE SERVICES.

The late Surgeon-Commander Frederick Fedarb, R.N., who died at Southsea on May 25th last at the age of 52, was the only surviving son of the late Fleet-Engineer William Fedarb, R.N. He obtained his degree of M.B., C.M., at Glasgow University in July, 1887, and joined the Royal Navy as surgeon in 1890. He did service at home and abroad and was fleet surgeon of H.M.S. *Dreadnought* during her first commission. At the outbreak of war he was principal medical officer of the Boys' Training Ship *Impregnable* at Devonport, but early in 1916 he was appointed to H.M.S. *Revenge* and served in her at the battle of Jutland. Dr. A. I. Eselmont, of Birmingham, who was with him in *Revenge* writes: "No one could have wished for a better 'chief' or more devoted friend. Dr. Fedarb was a capable administrator, well versed in all the service routine and with a sound, up-to-date knowledge of his profession. He was loved by all his shipmates, because of his quiet, unobtrusive, kind, and generous disposition, and it was a great shock to hear of his untimely death."

Colonel Sir Robert Armstrong-Jones has been appointed a Deputy Lieutenant of the county of Carnarvon.

Correspondence.

"Audi alteram partem."

PROFESSIONAL SECRECY IN THE EYE OF THE LAW.

To the Editor of THE LANCET.

SIR,—The attention of the council of the Medical Defence Union has been drawn to certain remarks (reported in Berrow's *Worcester Journal* of June 7th) made by Mr. Justice Bray in a case tried before him at the Worcester Assizes at the beginning of this month. The case in question was the prosecution of an unmarried woman for alleged concealment of birth. The medical man, who was called in six hours after the birth, was unable to find the body of the child, and after considering the matter decided that his duty to the patient precluded him from making any communication to the police. The police, however, upon the matter being subsequently notified to them, took a different view and adversely commented upon the doctor's conduct. He accordingly consulted the Medical Defence Union, who upheld his action in not reporting the matter to the police on the ground that had he done so he would have been guilty of a breach of professional confidence.

At the Assizes the woman was found "Not guilty." At the conclusion of the case the judge called the doctor in question into the box and addressed him, according to the report from which we quote, to the following effect:—

"..... the judge said that he saw that in the depositions the doctor had stated that, knowing that a child had been born in the room, probably recently, he did not think it was his duty to inform the police; in fact, it would have been a gross breach of professional confidence if he had informed the police, and he protested most strongly against the police reporting the matter. The judge added that in his opinion the doctor was quite wrong. There was no professional confidence in criminal cases of this kind, and it was his (the doctor's) duty to inform the police at once in a case like this. The doctor could understand the importance of it because it was possible that the child might have been still alive, and in that case it was the duty of the police to make inquiries. There was no professional confidence to prevent him giving information to the police. 'I want you to please remember that,' added the judge 'I am not blaming you for taking that view, but I think it is important that it should be known that the view you took was wrong.'"

Dr. Standring: "The Medical Defence Union instructed me that I was absolutely correct."

The Judge: "The Medical Defence Union is wrong. If you had your attention called to a patient committing the offence of cutting another man's throat, it would be your duty to go and inform the police. There is no difference between a small and a big offence."

Apart from the fact that in the case which had been tried a verdict of "Not guilty" had been returned, the council of the Medical Defence Union is unable to accept the analogy attributed to the learned judge as a fair one, or to allow that the cases are in any way comparable. The standpoint taken up by the medical profession on this subject has more than once been challenged by the legal profession. The council nevertheless maintains that the duty a medical man owes to his patient is paramount. Assured as it is on this important question the council feels it incumbent upon it to continue to advise any member seeking the guidance of the Medical Defence Union that any communications made to him by a patient and any information acquired by reason of his attendance upon such patient are confidential, and that without the authority of the patient a medical man is precluded by the accepted canons of his profession from disclosing such information to anyone. In adopting this attitude the council feels it will have the support of all those members of the profession who desire to maintain inviolate the trust and confidence which is reposed in them by their patients. I am, Sir, yours faithfully,

JOHN TWEEDY,
President, Medical Defence Union.

4, Trafalgar-square, W.C.2, June 30th, 1919.

HOMICIDAL INSANITY.

To the Editor of THE LANCET.

SIR,—In the interesting leading article in your issue of Saturday, June 28th, on the law and psychology of these terrible cases one point seems to me to have been overlooked. I can hardly discuss it without reference to the case recently before the courts, because certain evidence in that case has to

be cited, but I am very unwilling to enter into any controversy, still more to weight the evidence, for or against a criminal of whose case I know no more than any other reader of the newspapers.

The point I would touch upon, as far as possible in the abstract, is this: All alienists will agree that the commission of such a crime in an epileptic state is quite in accordance with experience. Many of us have seen crimes far more elaborate and systematically carried through in such states of automatism, but with this very important difference. I understand from your columns that in the case before us the criminal confessed the whole story to the constable who took him into custody. Now, in my experience of such automatic actions, criminal or indifferent, this has never been the case. In the large majority of instances in my experience the perpetrator has had no recollection whatever of the act or series of acts imputed to him; in a few he has had a vague recollection as of a dream, but would have been quite unable to tell the story plainly as a chain of facts in which he was concerned. Moreover, these few have regarded the events as hardly connected with themselves, and even then as an unfortunate accident which had befallen them by no will of their own.

I am, Sir, yours faithfully,

Cambridge, July 1st, 1919. CLIFFORD ALLBUTT.

EPIDEMIC PERINEPHRIC SUPPURATION.

To the Editor of THE LANCET.

SIR,—Most medical officers would, I think, agree with the remarks made by Dr. W. Pasteur in his letter on the above subject in your columns of June 21st. Perinephric abscesses containing *Staphylococcus aureus* were common in France, as they had been in civil experience before the war, and in the same way they were usually related to a small boil or other known focus of staphylococcal infection elsewhere, a focus that might have become quiescent many weeks before the development of the perinephric inflammation. In these cases, however, it does not follow that the "perinephric tissue is the site of election," as suggested by Dr. Pasteur. Perhaps the abscess has its origin more commonly in a small infective embolus within the kidney, from which pus burrows its way outwards, passing through the capsule of the kidney, and so developing into a large extra-renal collection. When abscesses arising within the kidney take such an outward course they do not spread laterally between the capsule and the kidney itself. A specimen in the Museum of University College Hospital illustrates this process, with a tiny track of yellow doubly refractive fat in the kidney, and a considerable collection of pus external to the capsule at the upper pole. Conversely the embolic abscess may rupture into the pelvis of the kidney, and be drained away so that a perinephric abscess does not develop.

More evidence from post-mortem observations is needed to determine the local origin of these perinephric staphylococcal abscesses, and to give the answers to two questions that arise in connexion with Mr. Joseph Cunning's letter—namely: (1) whether the perinephric abscess comes by outward spread of infection from an embolus within the kidney itself, or from some other focus? (2) whether the original source of the perinephric suppuration is the staphylococcal infection of subcutaneous boils, or the secondary staphylococcal infection of the respiratory tract that has occasionally been seen as a complication of influenza, and might lead to an epidemic of such abscesses at a time when complicated influenza is rife?

It is certain that the ordinary or sporadic perinephric abscess in France was the sequel of boils, just as pyæmic abscesses in other tissues (for example, in the myocardium causing suppurative pericarditis) or virulent staphylococcal septicæmias have occasionally been seen with such a history, when there was no possibility of their having been caused by a staphylococcal infection of the lungs coincidently with an attack of influenza. Among these there is one group of cases of very considerable interest, where the staphylococcal infection from boils enters the lungs directly and produces a picture somewhat like that of an original influenza. Such cases were not, to my knowledge, frequent in civil experience, but several pathologists saw them at autopsy during the war in France. A description of these cases was written in 1916 by Captain H. W. Kaye, R.A.M.C., but its publication was forbidden at the time by the military censorship. They presented the signs of acute pulmonary disease with profound toxæmia, and were clinically diagnosed at first as "pneumonia." Post-mortem examination discovered innumerable small acute abscesses in the lungs, these being related to the lung-vessels and not to the bronchi. An actively inflamed boil was generally found close to some tributary of the superior vena cava, with pus tracks radiating into the tissues, and staphylococci had been present in the blood during life. Curiously, no embolic abscesses were observed outside the area of the lungs. Death usually results in these acute pulmonary cases, where the resistance to staphylococcal infection must be very low; but I have seen an example of double staphylococcal empyema, that may have belonged to this group, and in which recovery followed upon drainage of the pleural cavities. It is an extraordinary fact that in the special skin hospitals at the base, where acute and chronic boils were very numerous, deeper complicating abscesses were practically never seen. The proportion of cases with boils, in which such abscesses occur, must therefore be very small. Nolf, Bossaert, and Colard, however (*Archives Médicales Belges*, Janvier, 1918), have insisted that a passing infection of the blood and of the urine by staphylococci is more frequently present than has been generally recognised.

Staphylococcal blood infection as a complication of true influenza was described by Patrick and Garrod in THE LANCET of Jan. 25th, 1919. It is quite probable that a "boil" in the lung as a complication of influenza may lead to all the various staphylococcal abscesses at a distance that are known to follow a subcutaneous boil, and that there may in reality be such an epidemic as has been suggested by Mr. Cunning.

I am, Sir, yours faithfully,

T. R. ELLIOTT,
Late Colonel, A.M.S.; Consulting Physician, B.E.F.

University College Hospital, July 1st, 1919.

To the Editor of THE LANCET.

SIR,—I shall be very glad if you can spare me a little space for a few words further on this subject. Neither Sir Thomas Horder nor Dr. Pasteur see any reason to suppose that the condition of perinephric suppuration has any causative relation to influenza, but consider it to be a staphylococcal pyæmia. It may smack of the distinction without a difference type of argument if I desire to state that I feel it wrong to have expressed my opinion that "the recent epidemic of influenza was the primary disease in these cases of perinephric suppuration," and that I ought to have said as my actual opinion "associated with a primary influenzal infection." But this substitution affords me the opportunity to meet Dr. Pasteur's weighty objection that cases occurred in his experience long before the influenza epidemic manifested itself. It is, of course, admissible that during an epidemic any sort of otherwise unexplained pyrexia is conveniently included, and my assumption that two of my cases of perinephric suppuration occurred in patients who had suffered from definite attacks of influenza is justly criticised. But even at the risk of being wearisome I would like to reiterate my opinion that in these cases influenza exerted a determining influence.

It will be recalled that the secondary complications (the dreaded "influenzal pneumonia" and influenzal septicæmia) would appear to be due to organisms whose activity is exalted or altered by a primary invasion by *B. influenzæ*. It will be remembered, also, that the condition of "purulent bronchitis," originally regarded as a sort of pathological entity, was shown subsequently to be primarily an influenzal infection, and these cases occurred fully two years before the actual epidemic of influenza.

In accepting, then, the authoritative pronouncements of Sir Thomas Horder and Dr. Pasteur, I venture to claim some justification for my support of Mr. Cunning that the condition of perinephric suppuration was associated with influenza, although I see that I was in error in using the term "epidemic" in this connexion.

I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS.

Connaught Hospital, Aldershot, June 28th, 1919.

INDUSTRIAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—The leading article in THE LANCET of June 21st and the special article in to-day's issue are most timely and apt. Unfortunately, during the war, under the plea of economy, the Government abolished the statutory inquiry by the certifying factory surgeon into the cause and prevention of certain accidents by machinery. These investigations gave the certifying surgeon a very real and intimate knowledge of the working conditions and danger-points in all the factories within his district. This experience familiarised him with the temperature, moisture, dustiness, weight-lifting, periods of rest and activity, and the strains and stresses peculiar to each particular process, also the mental and bodily exertion demanded of the workers. Such knowledge is essential to a medical man who has to estimate and certify that young boys and girls are suitable or fit to be employed in a particular occupation. The certifying surgeon of some years' standing still retains in his memory the danger-spots and unwholesome parts in mill and workshop. It is surely highly important that this close practical intimacy should be restored or other equally real routine of duty inside the factory should be given to newly appointed certifying surgeons to enable them to judge wisely the suitability of our youth to bear the hazards of fatigue, and so minimise the ever-present risk of accident and ill-health.

Unfortunately, this branch of the factory department has been hampered and its value to the community made less efficient for many reasons. A recently appointed officer has often an insufficient acquaintance with the principles and details of industrial hygiene. A course of instruction in this subject is most desirable of those selected for these posts. He should have more executive authority in enforcing his recommendations and provisional certificates. More supervision and standardisation of his duties are required. The public must be better educated into the necessity and utility of this and allied services so that the risk of clashing is avoided between parental gain, individual liberty, and the welfare of the rising generation. Lastly, the sixpenny fee should be abolished. To expect that a satisfactory examination can be made and a certificate given for such a sum is the abnegation of common sense and experience. Reforms on the lines above indicated and further regulations which your articles and modern opinion demand are, I believe, appreciated by the heads of the Factory Department. If carried out they would rapidly build up a competent industrial medical service throughout the country. I am, Sir, yours faithfully,

Wigan, June 28th, 1919. R. PROSSER WHITE.

DETOXICATED VACCINES.

To the Editor of THE LANCET.

SIR,—I was very much interested in the excellent paper by Dr. David Thomson on detoxicated vaccines in THE LANCET of June 28th. As I have been working on very similar lines for over a year I should like to raise a few points and offer a few suggestions upon the subject.

1. *As to the nature of the toxin removed.*—Dr. Thomson states that this is the endotoxin, though the impressions gained at the present stage of my investigations do not suggest this. I have no evidence that it is comparable to the exotoxin of *B. diphtheriæ*, *B. tetani*, &c., but I have considerable evidence that it is situated outside the organism and it can be removed without causing autolysis of the organisms. From the rough chemical investigations made it appeared to be a nitrogen-containing fat or lipoid, and at present I picture it as an external toxin.

2. *As to the nature of the precipitate.*—In addition to the stroma of the organisms the precipitate contains another substance, which, I believe, is of considerable importance in the production of antibacterial substances.

3. Dr. Thomson does not offer an explanation of the rapid production of immunity following administration of detoxicated vaccine. It is difficult to understand how the body can be stimulated to produce antibodies in less than 24 hours, and yet in acute pneumococcal infections a corresponding sensitised vaccine will give definite evidence of immunity production in from six to eight hours, and I have recently modified my method of making detoxicated vaccines which apparently give similar results.

4. I agree with the editorial comment that more evidence must be produced before the complement-deviation reaction can be taken as an indication of the resulting immunity titre. I should regard these reactions as evidence of bacterial substances in the blood stream, but not necessarily immune bodies.

5. *Suggestions as to dosage and possible dangers.*—About a year ago I was preparing detoxicated vaccines which I think would be identical with those described by Dr. Thomson, though the technique used was different, and I investigated the vaccine so produced from the following standpoints: (*a*) To determine whether it was non-toxic and harmless to normal individuals and animals; (*b*) to determine the effects when given during, or at varying intervals before, infection with the corresponding organism; (*c*) to determine whether it was superior to an ordinary vaccine in producing immunity.

Without going into details, the conclusions arrived at were that for many organisms, such as streptococci, pneumococci, &c., the detoxicated vaccine was for practical purposes harmless and non-toxic, except in cases of severe general infection, as, for example, streptococcal septicæmia. There are also organisms which may produce a severe toxic effect, and *B. dysenteriæ shiga* is an example. Rabbits appear to tolerate, without showing any signs of discomfort, enormous doses of a detoxicated virulent strain of pneumococcus, while they are susceptible to comparatively small doses of Shiga prepared by the same method. The signs and post-mortem findings do not constitute the entire group of typical Shiga infection, but the animal nevertheless rapidly dies.

Dr. Thomson has presumably worked out the results principally with the gonococcus, and in infections with this organism evidences of general toxæmia are usually slight. Until the nature of the immune bodies produced by this form of vaccine has been determined—and I think they will be found to be of a variety not usually produced—I should like to put forward the following suggestions as to the use of this form of vaccine in general infections. I have had no experience with it in gonococcal infection, but have used it a good deal in other infections and carried out a number of animal experiments.

(*a*) *As to dosage.*—I should suggest its use more on the usual lines of administering sensitised vaccines, and the method I employed was to give 500, 1000, and 1500 million on three consecutive days, followed by a dose of 1500 million every fourth or fifth day. Also, until we know more about the exact results, I should regard 2000 million as a maximum dose, at any rate in severe infections. This suggestion is based upon conclusions that because a given dose is harmless in a normal individual or in one suffering from a chronic infection, it does not necessarily hold that the same applies to a patient suffering from a severe acute infection. I think it possible by the rapid production of antibacterial substances to produce a condition analogous to "sterile death" in these cases. Under these circumstances the disease might be cured, but the patient would not survive. Also surplus vaccine given to a patient in extremis might unnecessarily add to the existing severe toxæmia.

(*b*) *When using a previously untried organism.*—I should suggest commencing with relatively small doses. I have inoculated myself with several thousand million detoxicated pneumococci without any local or general ill-effects; but I should not like to have to try a similar initial dose of *B. dysenteriæ shiga*.

If used, while bearing in mind the above two factors, I am sure that vaccines prepared as described so ably and fully by Dr. Thomson will be found to be very much more effective than ordinary vaccines. I think, however, that the detoxication process is not quite complete, and I have recently evolved a modification which promises to be a more complete imitation of sensitisation. These findings I hope to publish shortly when completed.

I am, Sir, yours faithfully,

S. G. BILLINGTON, M.B. Lond.,

Stoke-on-Trent, June 30th, 1919. Late Temporary Captain, R.A.M.C.

THE GILCHRIST SCHOLARSHIP FOR WOMEN WAR WORKERS.—The Gilchrist trustees offer through the council of the London (Royal Free Hospital) School of Medicine for Women a special scholarship tenable at the Medical School by a woman who has served under an organisation directly connected with the war during not less than three years since August, 1914. The scholarship is of the value of £50 per annum for five years. Applications should reach the warden and secretary of the Medical School, 8, Hunter-street, Brunswick-square, W.C.1, not later than July 12th, from whom the necessary form of application and all particulars may be obtained.

Obituary.

RT. HON. SIR JOHN McCALL, M.D., HON. LL.D., GLASG.

Sir John McCall, who died of pneumonia on June 28th, was better known as a statesman than as a doctor. He was, however, a graduate of medicine in the University of Glasgow, taking his M.B. degree there in 1881 when only 21 years of age, and it was not until 1888 that he entered the political world as a Member of the Tasmanian House of Assembly. He carried his medical experience and qualifications with him in his political career, and in 1903, when he became Chief Secretary, he was responsible for an entire reorganisation of the Tasmanian Department of Health. In 1904 he became M.D., and five years later he was appointed Agent-General for Tasmania in London, an appointment which he held with conspicuous distinction until the time of his death. He was created a Knight Bachelor in 1911 and received the K.C.M.G. in the last Birthday Honours, no doubt as a recognition of the great services he rendered in promoting the welfare of Australian troops in hospital or billeted in this country. He allowed himself practically no recreations, his whole time being placed at the disposal of his fellow Australians in need of sympathy or advice. His career as a medical statesman is finding a worthy reproduction in that of his son, who is now district medical officer and medical officer of health in Leonora, West Australia.

EDWIN GREAVES FEARNSIDES, M.D., B.C. CAMB., B.SC. LOND., F.R.C.P. LOND., M.R.C.S. ENG.,

MEDICAL REGISTRAR TO THE LONDON HOSPITAL; AND ASSISTANT PHYSICIAN TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

A BRILLIANT medical career has been cut short by the death of Dr. Edwin G. Fearnsides, which took place on June 26th as the result of a boating accident. Dr. Fearnsides, who was born in 1883 at Horbury, Yorks, was the son of the late Joshua Fearnsides, and was a successful student at Cambridge, the London Hospital, and at Berlin. In 1902 he was senior scholar at Trinity Hall, Cambridge, and graduated in 1906 with a first-class in the natural science tripos. In the same year he won the Anatomy and Physiology prize at the London Hospital, having in the previous year graduated B.Sc. Lond., taking first-class honours. In 1908 he proceeded to the M.B. and B.C. degrees, and also obtained the Conjoint Diploma of the London Royal Colleges while holding the appointments of clinical assistant to out-patients and house physician to the London Hospital. In the following year he became receiving-room officer, resident anæsthetist, and clinical assistant to the ophthalmic department and at the Hospital for Sick Children, Great Ormond-street, clinical assistant. He proceeded to the M.R.C.P., and after holding the position of house surgeon to the London Hospital in 1910, he became medical registrar a year later. In 1915 he was deservedly elected, on a very short probation, a Fellow of the Royal College of Physicians of London. He was a Beit Memorial Research Fellow and had been assistant examiner in medicine for the University of London. Late Major in the Royal Air Force, he was neurologist to the Hospital for Officers of the Royal Flying Corps, and resident medical superintendent of the Home of Recovery, Highfield. He had recently become a valued editorial writer in our columns.

As assistant physician to the Hospital for Epilepsy and Paralysis, Maida Vale, Dr. Fearnsides found an opportunity of perfecting his knowledge of neurology, a subject with which he was specially interested in addition to general medicine, and he contributed much to the literature of both subjects. He was the author of the articles "Eosinophilia" in Allbutt's System of Medicine, "Parasyphilis of the Nervous System" (with Drs. Head, Fildes, and MacIntosh) in *Brain*, 1913, and (with Dr. Head) of "Clinical Aspects of Syphilis of the Nervous System in the Light of Wassermann Reaction and Treatment with Neosalvarsan," 1914, as well as of "Intracranial Aneurisms" and "Innervation of the Bladder" in subsequent years. In 1914 he read a paper before the Electrotherapeutical Section of the Royal Society of Medicine on Diseases of the Pituitary Gland and their Effect on the Shape of the Sella Turcica, which was published in THE LANCET of July 4th, 1914, and upon which valuable contribution to an important study we commented editorially in the same issue. To the Section of Neurology of the Royal Society of Medicine, among other valuable papers, he contributed one on the Essentials of Treatment of Functional Nervous Diseases in Soldiers, which was reported in our issue of March 23rd, 1918, and which well illustrates his way of approaching a difficult practical subject.

We have said enough to show that by the untimely death of Edwin Fearnsides the science and practice of medicine, as well as the institutions with which he was associated, suffer a heavy loss, but above all things Dr. Fearnsides was a fine type of the institutional officer. "He was," says the secretary of one of his hospitals, "a great and tireless worker, and he allowed nothing to stand in the way of his hospital work. He was devoted to his patients, and particularly can this be said of him during the war, when the functional side of nervous disease became an urgent matter. During his tenure of office as an assistant medical officer at Springfield War Hospital, and whilst medical superintendent of 'Highfield,' Golders Green, he worked tirelessly first for serving soldiers at Springfield, then for pensioned soldiers, and afterwards for officers of the Royal Air Force at 'Highfield.' As a colleague he was always prepared to place his

EDWIN GREAVES FEARNSIDES, M.D.

services at the disposal of others, and his generous nature made him a host of friends amongst his patients and colleagues, all of whom will mourn his death. When he relinquished his commission as a major in the Royal Air Force Medical Service on the 31st May and left London for a holiday he was a tired-out man for the moment, but no one can doubt that he had a great future before him."

A. S. MacN., an intimate friend, in an eloquent tribute to Fearnsides's memory, dwells also in particular upon the value of his work at the Home of Recovery. "At Golders Green," he writes, "Fearnsides was most successful. Many an ex-soldier and ex-airman who was brought back to health and mental sanity through Fearnsides's instrumentality will feel personal regret for the loss of the doctor who first took the trouble to understand them. Fearnsides was an able thinker. With his chief and friend, Dr. Head, he was a pioneer in the interpretation of the 'new neurology.' He was never tired of teaching that in medicine the individual was to be considered and not the disease. His high intellectual gifts were recognised by the College of Physicians in his election to the F.R.C.P. at an unusually early age. Though young in years, already he had achieved much. Had life been spared to him he would have ranked as one of our foremost thinkers and physicians. In conversation he often sketched out proposals for treatises the skeleton-plans of which were marked by originality of thought, and which were

new and stimulating in suggestion. One, I remember, was to give us an entirely new conception of 'pain.' These, alas, will now never be written. *Diis aliter visum!* Fate snatched him from us at the zenith of human happiness, when his life seemed rich with the promise of all that was good."

GEORGE WILKS, M.C., M.B. CANTAB., M.R.C.S., L.S.A.,

LATE MASTER OF THE SOCIETY OF APOTHECARIES AND PHYSICIAN-IN-ORDINARY TO THE LATE DUKE OF EDINBURGH.

Dr. George Wilks, who died on June 11th at his residence, Ashford, Kent, aged 79, was a native of the town in which he lived, and the elder son of George Frederick Wilks, of the near-by village of Charing, where his father and other members of the family were medical men before him. He was educated privately until the age of 13, when he went to King's College, London. He afterwards studied in Dresden. Returning to England, he entered Trinity College, Cambridge, where he graduated B.A. in the Classical Tripos in 1863. For two years he was a pupil of Sir George Murray Humphry at Addenbrooke's Hospital, and afterwards a pupil of Sir James Paget at St. Bartholomew's Hospital. In 1867 he proceeded to the M.C. degree, taking also the M.R.C.S. Eng. and the L.S.A. He then started practice with his father at Ashford, and carried it on alone from the time that his father died till 1886, when he was joined in partnership by Mr. E. G. Colville. From 1907 to 1908 he was Master of the Society of Apothecaries of London, and his appointment as physician-in-ordinary to the late Duke of Edinburgh led to his attendance on the Duchess at the birth of the present Queen of Roumania and the Princess Beatrice of Orleans.

Dr. Wilks took an active interest in municipal and social matters, was a prominent Freemason, and a Vice-President of the League of Mercy. As an active supporter of the Ashford Cottage Hospital he helped to free that institution from debt, and in 1906 was presented with a handsome silver tray and a cheque for £150 in recognition of his services to the institution as medical adviser, honorary treasurer, and secretary. With his customary generosity he handed the cheque to the hospital for the formation of an emergency fund.

MICHAEL JOSEPH McCARTAN, L.R.C.P. & S. IREL., J.P.

THE death took place on June 27th at his residence at Rostrevor, co. Down, of Mr. Michael McCartan. Born in 1857, he was the youngest and only surviving son of the late Mr. Thomas McCartan, J.P., of Baymount, Rostrevor. In 1883 he became a Licentiate of the Royal Irish Colleges, and began practice in Newry, where he also was a member of the Town Commissioners; and in 1899, when that body was changed into the Newry urban council, he was elected chairman, a position he held until his retirement in 1901, when, owing to the state of his wife's health, he was obliged to go to reside in Jersey. From 1897 to 1901 he represented the Newry town board on the Carlingford Lough Commissioners, and he was an original member of the Newry Port and Harbour Trust. In 1893 he was made a justice of the peace for county Down. In 1901, in recognition of his valuable services to Newry, he was the recipient of a public presentation, which took the form of an address and an oil portrait, a replica being placed in the council chamber of the Town Hall. In 1909 he went to reside in Rostrevor, and was in that year appointed dispensary officer of the Rostrevor district, as well as medical officer of health; he was also consulting medical officer of health of the Kilkeel rural district council, and attendant on the Royal Irish Constabulary in Rostrevor, and certifying factory surgeon. All these positions he held at the time of his death. He was buried on June 29th at the old family burying-ground, Kilbroney, Rostrevor. Mr. McCartan was a skilful doctor, a shrewd man of affairs, and greatly respected by his medical brethren and his patients.

DISPENSARY DOCTORS' SALARIES IN IRELAND.—After an acrimonious discussion the Ballymena board of guardians, on June 28th, rescinded all previous resolutions on the subject, and fixed the scale of salaries for medical officers of the union at a minimum of £120 per annum, rising by annual increments of £20 to £200, except in the case of the Ballymena dispensary district where the maximum was fixed at £220.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR DEGREE OF BACHELOR OF MEDICINE.

Materia Medica and Pharmacology.—W. H. Butcher, St. John's; T. Y. Cathrall, Trinity; J. T. S. Hoey, Jesus; J. G. Johnstone, St. John's; H. A. Osborn, New; D. B. Pauw, Trinity; H. L. Rayner, Balliol; M. E. Shaw, New; W. F. Skaife, Trinity; and N. F. Smith, Balliol.

Pathology.—T. A. Brown, Exeter; C. K. J. Hamilton, Lincoln; J. T. S. Hoey, Jesus; H. A. Osborn, New; and H. L. Rayner and N. F. Smith, Balliol.

Forensic Medicine and Public Health.—L. G. Brown, Balliol; W. H. Butcher, St. John's; F. B. Chavasse and W. T. Collier, Balliol; F. G. Hobson, New; B. G. von B. Mellé, Brasenose; O. B. Pratt, Christ Church; N. F. Smith, Balliol; and C. P. Symonds, New.

Medicine, Surgery, and Midwifery.—L. G. Brown and F. B. Chavasse, Balliol; J. C. Dixey, Brasenose; F. G. Hobson, Queen's; O. B. Pratt, Christ Church; N. F. Smith, Balliol; and C. P. Symonds, New.

MASTER OF SURGERY.

R. O. Ward, Queen's.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR DEGREE OF BACHELOR OF MEDICINE.

Materia Medica, Pharmacology, and Pharmacy; Public Health: Medical Jurisprudence, Pathology, and Elementary Bacteriology.—Samuel Eric Hill Anderson, John Stratton Brogdon, James Struthers Clark, Edward Thomas Colville, Oliver Colville (second-class honours), Robert Collinson Davison, Dorothy Amatt Dixon (second-class honours), Thomas William King Dunscombe, Eskander Girgis, Barbara May Gringing, Donald Falconer Hocken, William Ewan Douglas Hodgson, Harold Holtby, Henry Norman Clarence Jaffé, George McCoull, Robert Turnbull Easton Nalsmith, Carl Damien Newman, Thomas Swinhoe Severs, Louis William Studdy, William Arthur Tweddle, William Christopher Wardle, and Edith Short Williamson.

THIRD EXAMINATION FOR LICENCE IN DENTAL SURGERY (L.D.S.).

Anatomy, Physiology, and Histology: Dental Anatomy, Dental Histology, and Dental Materia Medica.—Montague Olswang and Gainsford Reed.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination and have been granted the diploma L.D.S. R.C.S. Edin.:—

Euphemia Ross Hadley, Thomas Stewart Tait, Andrew Finlay Readdie, and Edward Louis Adendorff.

ROYAL SOCIETY OF ARTS.—The council of the Royal Society of Arts have awarded the society's silver medal for the following papers read before the society during the past session:—

Edward C. de Segundo, A.M.Inst.C.E., "The Removal of the Residual Fibres from Cotton Seed and their Value for Non-textile Purposes."

Sir Frank Heath, K.C.B., secretary, Department of Scientific and Industrial Research, "The Government and the Organisation of Scientific Research."

Walter Leonard Lorkin, A.M.I.E.E., "Electric Welding and its Applications."

W. Norman Boase, C.B.E., "Flax—Cultivation, Preparation, Spinning, and Weaving."

Brigadier-General Lord Montagu of Beaulieu, C.S.I., "Aviation as Affecting India."

Professor John Cunningham McLennan, O.B.E., Ph.D., F.R.S., "Science and Industry in Canada."

ST. THOMAS'S HOSPITAL ANNUAL DINNER.—The dinner of past and present students of St. Thomas's Hospital will take place on Wednesday, Oct. 1st, at the Connaught Rooms, Great Queen-street, W.C., Sir George Makins, G.C.M.G., in the chair.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on June 18th, with Sir Francis H. Champneys in the chair. Two midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

A case being one of abortion and the patient suffering from excessive bleeding the midwife did not explain that the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (2 and 3); the midwife neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; neglecting to enter her records of pulse and temperature in a notebook or on a chart, carefully preserved, as required by Rule E. 14, and falsely denying all knowledge of the case when questioned by the Inspector of Midwives, and making false statements as to the entries in her register of cases. Being in attendance as a midwife at a confinement, the case being one of twins, and medical aid having been sought for both children, the midwife neglected to notify the Local Supervising Authority thereof, as required by Rule E. 22 (1) (a); one of the twin children suffering from inflammation of, and discharge from, the eyes, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5), and medical aid having been sought for the said child she neglected to notify the Local Supervising Authority thereof, as required by Rule E. 22 (1) (a).

EPSOM COLLEGE.—The sixty-sixth annual general meeting of the Governors of Epsom College was held on June 27th at 37, Soho-square, W., when Sir Henry Morris, the treasurer, presided, and was supported by a large number of governors. The treasurer moved the adoption of the report for the past year, which showed that there was a moderate surplus on the income and expenditure account, though this could only be looked upon as a temporary saving, in view of the fact that only pressing repairs had been carried out at the College owing to the Government's restriction on building, the lack of labour, and the high cost of materials. A bequest of £5000 less £500 duty was noted from the late Mr. Henry Duncalfe for the purpose of establishing annuities for "the daughters of medical practitioners who shall be and so long as they shall remain unmarried and who shall have attained the age of 50 years." The pensions will be of the annual value of £30, and the election remains in the hands of the council of the College. The report further stated that the War Memorial Fund, instituted by the Old Epsomian Club with a view to rebuilding the nave of the chapel in harmony with the new chancel and to place in it a suitable monument bearing the names of old Epsomians and Epsom masters who have sacrificed their lives in the war, had not been responded to so generously as the committee of the fund expected. It was pointed out that contributors to this fund would be given the same voting privileges as those allotted for contributions to the Royal Medical Foundation of the College. One of the vice-presidents of the College, Dr. Ralph Gooding, had established, said the report, a prize for annual competition amongst the students of the College to be called "The Ralph Gooding Botany Prize." The report concluded by stating that over 800 Old Epsomians had served with the Forces, and that in the Roll of Honour were included 122 who had died on active service. 72 Old Epsomians had been mentioned in despatches, 1 was awarded the Victoria Cross, and 83 received decorations and honours for war services.

In proposing the adoption of the report the Chairman drew attention to the fact that the bequest from the late Dr. Strong, which had been reported in the press recently, was left for the specific purpose of increasing pensions and for providing new pensions. He also mentioned the need of special gifts for other purposes, such as building, repairs, reducing the mortgage, making good the depreciation of stocks, and providing for increases in masters' salaries. The expenditure in future on the last-named item would be greatly increased owing to the provision of higher salaries for masters.

The meeting was concluded by a unanimous vote of thanks to the Chairman for presiding.

THE Royal Society of Medicine has nominated Sir Humphry Rolleston as representative of the society on the panel to be appointed by the Minister of Health to assist him in selecting a Consultative Council.

THE RESEARCH DEFENCE SOCIETY.—This society held its annual general meeting on June 26th at the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, where it now has its office and official address. Lord Knutsford presided, and the meeting was very well attended. A short address was given by Sir Anthony Bowlby on Experimental Medicine and the Sick and Wounded in the War. Sir Frederick Macmillan proposed, and Captain Walter Elliot seconded, a vote of thanks to him. The committee's report gives an account of the society's lectures and of the measures taken against the Dogs' Protection Bill. "We have reason to congratulate ourselves on the strength of the opposition to the Bill in the newspapers, in the House of Commons, and at the Home Office; and we may fairly claim some of the credit for it. Certainly, ten years ago, neither the Government nor the press would have been so outspoken against a Bill which very naturally appealed to those who had not studied the subject." The honorary treasurer's report stated that the finances of the society were in a satisfactory state. "We have been able, after meeting all our expenses, to invest £500 in War Stock. This, added to our previous holding—amounting in all to over £1500—constitutes a valuable reserve to meet any extra expenditure which the work of the society may necessitate." Captain Walter Elliot, M.P. for Lanark, has consented to be assistant honorary secretary, working with Mr. Paget as honorary secretary. The committee greatly hope that some of the society's members will offer to give one or two simple, popular lantern lectures during the coming autumn and winter. There is a steady demand for lectures on such subjects as the work of Pasteur and of Lister, the recent discoveries in preventive medicine, and the medical and surgical facts of the war. It is quite simple lectures that are especially wanted in our small towns, our villages, our schools. The Research Defence Society has a good collection of lantern slides, and the honorary secretary will be very glad to be of any use to anybody who will give a lecture of this kind.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Select Committee on Pensions.

Field Marshal Sir DOUGLAS HAIG was a witness before the Select Committee on Pensions at the House of Commons on Tuesday, July 1st. In the course of his statement he called attention to the medical boards. In some cases, he said, the members of the board were ignorant of the actual diseases suffered. In others they were lacking in all sympathy and generosity. There was no uniformity in their decisions, and some treated every wretched individual who appeared before them as a malingerer. He strongly advised the appointment of a selected combatant officer to act as assessor, so as to produce some confidence in the decision. Again, in some cases the disability was reassessed at the Ministry of Pensions to the individuals disadvantage. That this should be done without the individual being seen or heard was contrary to all ideas of British justice. He urged a more generous and sympathetic treatment to all who suffered from gas poisoning, shell shock, and neurasthenia. It was admitted that their suitable employment was no easy matter. Employers were shy of giving them appointments. The most piteous appeals brought to his notice cried for an immediate reform in the method of treatment.

HOUSE OF COMMONS.

THURSDAY, JUNE 26TH.

Ministry of Health Appointments.

Lieutenant-Colonel DALRYMPLE WHITE asked the Prime Minister whether, as regards appointments to the new Ministry of Health, consideration would be given to the applications of officers and men who had served throughout the war, even though they might be slightly over the age hitherto laid down for admission to the Civil Service?—Mr. STANLEY BALDWIN (Financial Secretary to the Treasury) replied: The normal age limits for candidates for Civil Service appointments fixed before the war have been extended so that candidates at the competitions now being held under the reconstruction scheme who have served in the Forces may deduct from their age the full period of the war. This extension will apply to candidates for posts in all Departments alike, and I am not prepared to make any special provision for the new Ministries.

Hospital at Chepstow.

Mr. H. JONES asked the Parliamentary Secretary to the Shipping Controller whether the hospital built at Chepstow in connexion with the national shipyards, at a cost of about £100,000, was now empty and derelict; whether such hospital was built by contract; if so, who was the contractor; when was the work commenced; and on what date was the contract signed?—Colonel LESLIE WILSON replied: The hospital at Mount Pleasant, Chepstow, has been taken over by the Ministry of Pensions as from May 31st last for the treatment of neurasthenic and other cases. The building was erected by contract by Messrs. Henry Boot and Sons, and was commenced in December, 1917. The contract was finally signed on August 2nd, 1918.

National Insurance Bill.

Major ASTOR, Parliamentary Secretary to the Local Government Board, presented a Bill to alter the rate of remuneration for the purposes of exception from insurance under the National Insurance Acts, 1911 to 1918, and for purposes connected therewith. The Bill was read a first time.

FRIDAY, JUNE 27TH.

Dogs' Protection Bill: Third Reading Negatived.

On the motion for the third reading of the Dogs' Protection Bill proposed by Sir F. BANBURY,

Sir WATSON CHEYNE moved as an amendment that "This House declines to proceed further with a measure which would impose an unnecessary and vexatious obstacle to medical research." He said that he had not as yet spoken in the House on this Bill. He quite recognised the value of the amendment moved on the report stage as an alternative to the Bill itself, but the more he looked at the amendment the more he felt that it introduced a very great obstacle to research in these matters. It seemed a very little thing to get an additional certificate, but he would show that it really was not, and the very matter of getting this additional certificate was an obstacle which ought not to be introduced at the present time. From another point of view he did not think this Bill should be proceeded with, and that was because it involved a very grave censure upon a large body of honourable men and a great profession for which there was no justification whatever. He did not think the House realised what an

amount of obloquy had already been thrown upon men who were only trying to do something which might be of great use to mankind and science. The Bill as it stood practically stated that the House had gone carefully into the matter of all these accusations, and it implied that cruelty was being practised, that the medical profession delighted in torture, and that they could not be trusted in the matter of animals.

Sir F. BANBURY: That is not in the Bill.

Sir WATSON CHEYNE said that he asserted that that was what it implied; and for these reasons it was alleged that it was necessary to tie the hands of medical men still further, even though such a proceeding might involve a serious loss to humanity. He could speak of this matter from first-hand knowledge, because at one time he held certificates and licences for a number of years and later on in his career he became one of those who had the responsibility of signing certificates. Having sketched with some detail the rise of the study of bacteriology in connexion with clinical medicine and research, and the restrictions put upon animal investigations in the past, Sir Watson Cheyne protested against the further restrictions proposed by the Bill, which must result in lost enthusiasm and belated work. He gave a vivid picture of humanitarian exaggerations, illustrated to the House what an "animal experiment" really meant, showing why dogs were sometimes needed in the continuation of research, why post-mortem examinations could not take the place of experiments, and why many experiments, which had proved of immense value to the world in the past, might have been prevented by difficulties in the obtaining of certificates such as were foreshadowed in the Bill. The position then might be reached that we should have to go to Germany for our discoveries.

Further Criticism of the Bad Effects of the Bill.

Sir P. MAGNUS seconded the amendment. He said that the Bill proposed to impose further restrictions on a measure of great and fundamental importance to the health of the country. If it were for no other reason than preventing any reproach which was implied in the very title of the Bill attaching to the distinguished medical men who performed these experiments, that would be an amply sufficient reason for rejecting the Bill. If the Bill was passed in the form in which it stood, ignorant people who subscribed to the antivivisection funds would go about saying that the Bill had been passed in the House of Commons for the further restriction of experiments on animals, and that although it was true that the Bill had been passed with slight amendments, nevertheless a Bill had been passed saying that experiments on animals were cruel and inhuman. That would produce a very bad effect. Unless the Bill were rejected the friends of antivivisection would say that they had gained something from its passing, and the large sums of money which were absolutely wasted in the propaganda against vivisection would continue to be wasted, and the sums of money contributed by sympathetic and benevolent old ladies of both sexes which might be expended on founding research laboratories would be expended in the huge advertisements which met one wherever one went in support of objects which were not only useless but detrimental to the purposes of medical research. By the rejection of the Bill Parliament would show its appreciation of the efforts that had been made by scientific men through these researches to prevent and cure diseases, and it would be an argument in favour of research generally. The Bill itself was very inconclusive and contradictory.

Sir F. BANBURY said that the mover of the amendment seemed to have forgotten that a great change had been made in the Bill since it obtained its second reading. All that it did now was to require that a special certificate must be secured in the event of a dog being used for certain experiments. The amendment by which the form of the Bill was changed on the report stage was recommended to the House by a Member of the Government on the ground that the Government wished to make the measure accord with the recommendations of the Royal Commission, and all that the Bill now did was to say that a certificate must be required. Now they had the Government represented by another Minister sending out a three-line whip in order to cancel and render nugatory the amendment which they had themselves put into the Bill a short time ago.

HON. MEMBERS: And quite right, too!

Sir F. BANBURY said it was a breach of faith with the House. (Cries of "No, no" and "Nonsense.")

Sir H. CRAIK said he did not consider the attitude of the Government as inconsistent. He asked if it was suggested that men had no right to use animals for human advantage. If a shred of danger to human life was involved, would anyone in order to seek aid for a child of his own or anyone else's not even ride a horse to the death?

The Bill Contrary to the National Well-being.

Dr. ADDISON (Minister of Health) said he refused to bow under the reproach poured upon the Government and argued that there was nothing inconsistent in their attitude. They had come to the conclusion that notwithstanding the amendment inserted on the report stage they would still advise the House to reject the Bill. There was no inconsistency in that procedure. The Bill, as it stood, would permit a number of experiments on dogs. Sir F. Banbury said it was only a question of a certain certificate being required. That was just it; it was something they had to do in addition to what they had to do now. Already a licence must be held for an experiment upon an animal, and the experiment must be performed in a licensed place; the animal must be fully anæsthetised, and must remain under the anæsthetic without recovery unless another certificate was obtained to permit the animal to recover, as was sometimes desirable when experiments in feeding were being made. A further condition in regard to dogs and cats was that an additional certificate was required that either a dog or a cat were necessary on which to make the experiment. By the Bill it was proposed to add to all these conditions and qualifications the requirement of a further certificate that the object of the experiment would necessarily be frustrated unless it were performed on a dog, and that no other animal was available for such experiment. That was a considerable thing to ask in addition to all the other requirements. The practical question was, were they justified in imposing that further restriction on people who were already very strictly restricted, especially in the case of dogs? He had not heard a case brought forward in which there had been an abuse of the existing procedure, or in which it had been shown that the present very exacting scheme of restrictions had been found to be insufficient. There seemed to him no reason for putting a further restriction on research. Dogs had been used in the research in connexion with poisonous gas because with them it could be seen, as it could not be seen with horses or mules, for example, whether the protection was reasonable or not; and the finest mask which was on the battle-field was elaborated. It would have been asking too much of the men who performed those experiments that they should need all the licences and certificates which he had enumerated. Then there were the series of painless experiments which were going on with relation to rickets in children, which some authorities believed to be due to the lack of a certain element of diet. Dogs could be kept in a laboratory and fed on a mixed diet at stated intervals, and they were being used for that purpose; but it would be unreasonable to require proof that the experiments would necessarily be frustrated unless they were performed upon dogs. These experiments were stated to be progressing, and it was to be hoped that they would be successful. It was still clear that as the Bill now stood it would make demonstration difficult and embarrassing, contrary to the best interests and well-being of the people. On that account, without any hesitation, any breach of faith, or any misgiving, he asked the House to reject the Bill on third reading.

After further discussion the House divided, when there voted—

For the third reading	62
Against	101
Majority against	39

The Bill was accordingly rejected.

Nurses' Registration Bill.

The House considered the Nurses' Registration Bill as amended in Standing Committee.

An amendment was agreed to defining the term "registered children's nurse" as a children's nurse who was for the time being registered in the children's nurses' supplementary register.

Another amendment was also agreed to raising the membership of the Council from 42 to 45 members.

Lieutenant-Commander ASTBURY moved to leave out paragraphs (*a*) to (*k*) inclusive in Subsection (1) of Clause 4 relating to the constitution and appointment of the Council. The amendment was resisted by Dr. ADDISON in the name of the Government, and the debate upon it was adjourned.

MONDAY, JUNE 30TH.

Local Government Board Vote.

On a vote for £1,390,377 for the Local Government Board,

Dr. ADDISON (Minister of Health) said that this Vote would in future be incorporated in the Vote for the Ministry of Health. In connexion with demobilisation, one of the earliest fears that had been entertained—which had been justified to some extent by the event—was that so many men serving overseas in countries where they were likely to be infected with tropical diseases of various kinds might mean the spread of the diseases in this country. An interdepartmental organisation was accordingly set up to prevent the spread of such diseases, and, in the main, the methods which had been adopted had proved to be successful. In addition, a committee dealt with the subject of tuberculosis, which in many cases had been aggravated by hardships arising out of the war, and the

Board hoped to receive their recommendations in a short time. On June 1st the number of soldiers infected with the disease in institutions was 2000, and on the waiting list there were 364.

The Work of the Medical Department of the L.G.B.

The medical services of the Board, which now became merged in the Ministry of Health, were very diverse, but with respect to some of them they were only at the beginning. Up to the present they had had only 19 cases of small-pox, all of which had been arrested, and there were several cases of cholera, dysentery, and so on, which also had been prevented from spreading.

Rabies.—With regard to rabies, 54 cases had been notified, and six centres had been established in the country where anti-rabies vaccine could be obtained. The first 19 persons affected had to be sent to Paris, but subsequently 24 were treated in England, and 11 were afterwards treated with vaccine prepared in our own laboratories. It was rather a reflection upon us as a nation that we were dependent upon supplies obtained from our Allies in the early stages of the disease. None of the cases, he was glad to say, had developed into hydrophobia.

Influenza.—During the six months ended March 31st in England and Wales alone there were 136,000 deaths from influenza. That indicated the necessity for spending money in conducting research and inquiry into influenza, but at the present time he would not hold out any sanguine hopes of what they might be able to do in that direction. A great deal of inquiry was necessary before they could speak with any hopefulness on that subject.

Venereal diseases was another topic on which he ought to say a word. They had a number of critics of the action they had taken. Under the Regulations issued in July, 1916, 75 per cent. of the cost of schemes designed to conquer venereal diseases was paid by the State. There were at the present time 146 centres, of which some were exceedingly good. A large number of those centres were not, in his opinion, doing as well as they would do in time, and they needed not only 140 but 1000 centres at the very least. The difficulty was to obtain the staff with the modern training arising out of the experiences of the war to carry them on. It would only be gradually, and they would develop and train the personnel and organisation throughout the whole country to make the best use of these centres. The Board had sometimes been blamed because they did not support compulsory notification. His view—and he thought the Committee would support him—was that it was quite hopeless to require compulsory notification until they had completely or substantially completely organised throughout the country efficient and up-to-date methods of treatment, otherwise they would drive people wholesale into various imperfect methods and very largely into the arms of quacks. One very important matter that they had got to work out in detail was to try to get the centre conducted on such lines that the people needing its assistance would readily go to it. The numbers in attendance in 1917 were 205,000; in 1918 they were 488,000.

Tuberculosis.—With regard to tuberculosis, although they had increased the number of beds available by 1500 during the past year, their methods were far from being sufficient, and it was quite useless to expect that they would be able successfully to cope with the disease until they had got an improved state of national housing. They had at present before them proposals for 3300 additional beds. The grants made last year were £383,000.

Maternity and child welfare centres was another branch of their work which they would have to develop, and this went hand in hand with improved nursing and midwifery services. All these services were to a great extent in an experimental stage, and in all of them the limiting factor was the getting of the trained assistance necessary to do the work.

The blind.—The latest development of all was in connexion with the treatment of the blind. A Committee which had been working since 1917 with certain regional committees had made the fullest survey of the blind population of the country and had examined all the institutes where training was given. Just lately the Government had sanctioned the provision of £125,000 to be distributed in assisting the blind in their workshops, in homes and hostels, for home teaching, and for various miscellaneous services in institutions that had been carefully examined and approved.

Sir D. MACLEAN thought and Dr. Addison's statement was interesting but not satisfactory. It was shocking to hear that in six months the country had suffered the loss of 136,000 lives, many of them, no doubt, old people who could not pull their full weight in the national boat, but still the majority men and women in full activity. As the health of the community ought to be their first and most important care, he threw out the suggestion that the right honourable gentleman should make a statement on housing conditions and health matters at least once a month in order to stimulate local authorities and to spread knowledge as to the best way of meeting what in many cases were easily preventable diseases.

Lieutenant-Colonel RAW deplored the ravages caused by tuberculosis, and said that with the advent of the Ministry of Health he was certain that a much greater effort would be made to stamp out what was a preventable disease. There should be a much more generous system, and facilities should be provided free of charge at the national expense for treatment in the early stages of tuberculosis. Prevention was far better than cure. He suggested the advisability of a great educational campaign, the establishment of a national health institute, and the appointment of lecturers to instruct the public that this disease ought not to be in our midst. He went on to criticise the milk-supply of the country.—Lord H. CAVENDISH-BENTINCK complained that the Government was not doing all it should do to improve the very unsatisfactory treatment which was being accorded to discharged soldiers suffering from tuberculosis.

Major ASTOR (Parliamentary Secretary to the Local Government Board), replying to the debate, said that the Ministry of Health would embark on its official career with a real vision of what it hoped to do. He would not say that the number of institutions now available for the treatment of tuberculosis was adequate either in number or quality. But there was great difficulty in providing fresh institutions during the war. In 1914 the number of deaths from tuberculosis was 38,600 and in 1917 it was 43,100. These figures, however, must not be taken too rigidly. Allowance must be made for the fact that diagnosis was improving. Still there was no diminution. The disease was one which depended upon the social conditions of the people, and these had to be improved. Generally speaking, their policy was more and better accommodation and better treatment. He believed that the development of workshops and the provision of occupation would assist enormously. The lines they were going on were that it was far better to provide treatment for the population as a whole than merely to provide treatment for the tuberculous ex-soldier. The whole tendency was against specialising in particular diseases, but to make the local authorities and medical officers competent to deal with anything that might arise.

The Welsh Board of Health.

Brigadier-General Sir OWEN THOMAS asked the Secretary to the Local Government Board, as representing the National Health Insurance Commissioners, if the Welsh Insurance Commissioners had been appointed the Welsh Board of Health under the Ministry of Health; if so, whether he consulted the Members representing Wales before making the appointment; and whether he was aware that there was dissatisfaction in Wales with the manner in which the Commissioners discharged their duties as insurance commissioners.—Major ASTOR replied: The members of the Board of Health in Wales are appointed by the Minister of Health under Section 5 of the Ministry of Health Act, 1919; the three persons appointed as initial members have hitherto been members of the Welsh Insurance Commission, but the Board is not yet complete. The answer to the concluding part of the question is in the negative.

Sir O. THOMAS: Will the honourable gentleman make inquiries as to whether these three gentlemen have been on speaking terms for the last two years?—Major ASTOR: It would be very difficult to find out.

TUESDAY, JULY 1ST.

Disabled Men and Compulsory Insurance.

Colonel ASHLEY asked the Minister of Health whether, in view of the inequality of treatment meted out to totally disabled pensioners as compared with partially disabled pensioners in the matter of sickness and disablement benefits, men in receipt of disablement pensions amounting to over £26 per annum might be regarded as eligible for exemption from compulsory insurance or, alternatively, that no reduction of benefit should be made to a man drawing a total disablement pension if he was incapacitated from following his employment owing to causes unconnected with his pensionable disabilities.—Major ASTOR replied: A man in receipt of any disability pension exceeding £26 per annum is entitled to a certificate of exemption under the National Insurance Acts. It would not be feasible to carry out the suggestion contained in the last part of the question owing to the difficulty in practice of differentiating between incapacity resulting from the original disability and incapacity resulting from other causes. But the 1917 Act provides for the resumption of the right to full sickness benefit in the case of any total disability pensioner who has, in fact, re-established his working capacity.

LITERARY INTELLIGENCE.—Mr. C. T. Kingzett, F.I.C., the chairman of the "Sanitas" Company, Ltd., and one of the founders of the Institute of Chemistry, is preparing for early publication by Messrs. Bailliere Tindall and Cox (London), an abridged "Popular Chemical Dictionary" in a single volume.—Mr. Kimpton will supply a copy of an erratum slip for Macleod's Physiology and Biochemistry in Modern Medicine, recently published, to any reader who desires it.

Appointments.

BANKS, CYRIL, M.B., B.S. Lond., D.P.H., has been appointed Medical Officer of Health of Stafford.

BREWER, W. K., M.R.C.S., L.R.C.P. Lond., Honorary Anæsthetist to the National Dental Hospital, Great Portland-street.

GRAY, H. T., F.R.C.S., Honorary Surgeon to the Infants Hospital, Vincent-square, Westminster.

TIBBLES, SYDNEY, L.R.C.P. & S. Edin., Honorary Ophthalmic Surgeon to Western General Dispensary.

Royal West Sussex Hospital, Chichester.—H. E. RUTHERFOORD, M.D., B.Ch., B.A.O. Dub., Honorary Physician; HAMILTON, G., M.B., B.S. Lond., Honorary Assistant Surgeon; and EUSTACE, G. W., M.D. Dub., Honorary Radiographer.

St. Thomas's Hospital.—BIRLEY, J. L., M.D., B.Ch. Oxon., and TIDY, H. L., M.D., Ch.B. Oxon., Physicians in charge of Out-patients; PAGE, C. M., M.B., M.S. Lond., and ROMANIS, W. H. C., M.B., M.C. Cantab., Surgeons in charge of Out-patients; JEWESBURY, R. C., M.D. Oxon., Physician in charge of the Children's Department; WYATT, J., M.B., B.S. Lond., Obstetric Physician in charge of Out-patients; JONES, Sir ROBERT, K.B.E., Director of the Orthopædic Department; and WORDLEY, E., M.B., B.C. Cantab., Medical Registrar.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, Lake Hospital.—Res. Asst. M.O. £300.
Barnsley, Beckett Hospital.—H.S.
Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. Also Asst. S.
Bexley, Kent, London County Mental Hospital.—Asst. M.O. 7 gns a week.
Birkenhead Borough Hospital.—Hon. Dentist.
Birmingham General Hospital.—Res. M.O. £155.
Birmingham, St. Chad's Hospital, Edgbaston.—Res. M.O. £150.
Bradford City, Odeal Sanatorium.—Res. Asst. M.O. £300.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £200.
Cape Town University, South Africa.—Profs. of Med., Surg., Obstet. and Gynæc. £1250 each.
Carmarthen Mental Hospital.—Second Asst. M.O. £250.
Chelsea Hospital for Women, Arthur-street, S.W.—H.S. £120. Also Registrar. £50.
Chorley Borough Education Committee.—Asst. Sch. M.O. £400.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Edinbane, Isle of Skye, Gesto Hospital.—Res. M.O. £300.
Evelina Hospital for Children, Southwark, S.E.—Hon. P. and S. to Out-patients. Also Hon. Dental S. Also H.P. £160.
Glasgow Education Authority.—Asst. M.O. £400.
Great Northern Central Hospital, Holloway, N.—H.S. £150.
Greenwich Metropolitan Borough.—Female M.O. for Maternity and Child Welfare Work. £400.
Greenwich Union Infirmary, Vanbrugh Hill, East Greenwich, S.E.—Dep. Med. Supt. and Asst. Med. Supt. £400 and £300 respectively.
Hong Kong.—Bact. and Path. £600.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P.
Hospital in Serbia.—Surgeon.
Hospital for Sick Children, Great Ormond-street, London, W.C.—P. and S. Also Surgical Registrar. £200. Also H.S. £50.
Huddersfield County Borough, Bradley Wood Sanatorium. Res. M.O.
Hull, City and County of Kingston-upon-Hull Infectious Diseases Hospitals.—Res. M.O. £450.
Italian Hospital, Queen-square, London, W.C.—Hon. Asst. S.
London (Royal Free Hospital) School of Medicine for Women.—Two Demstrs. of Anat. £250. Also Female Pharm. £250.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. £120.
Loughborough and District General Hospital and Dispensary.—Res. H.S. £250.
Liverpool, Bootle Hospital, Derby-road.—Hon. Ophth. Surg. and Hon. Dent. Surg.
Maidstone, West Kent General Hospital.—H.S. and Asst. H.S. £250 and £125.
Manchester Children's Hospital, Garside-street.—Asst. M.O. £200.
Manchester Children's Hospital, Pendlebury, near Manchester.—Res. M.O.'s £150.
Manchester City.—M.O. £450.
Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S.
Manchester, St. Mary's Hospitals for Women and Children.—Two H.S.'s £100.
Merthyr Tydfil County Borough.—Female M.O. for Maternity and Infant Welfare Work. £500.
Mile End Infirmary, Bancroft-road, E.—First Asst. M.O., Second Asst. M.O. £300 and £250.
Miller General Hospital for South East London, Greenwich-road, S.E.—Hon. Asst. Gynæc.
Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £140.
Port Sunlight Cottage Hospital.—Res. M.O. £250.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. P., Hon. Med. Regist., and Hon. Anæsth. Also Clin. Assts.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Phys. to Out-patients.
Queen Mary's Hospital for the East End, Stratford, E.—Two Asst. Hon. P.'s.
Rhondda Urban District Council.—Asst. Sch. M.O.'s and M.O.H.'s. £500. Also Two Dent. Surgeons. £400.
Royal Chest Hospital, City-road, E.C.—Asst. P.
Royal London Ophthalmic Hospital, City road, E.C.—Curator and Librarian. £120.
St. Bartholomew's Hospital.—Asst. Administ. of Anæsth.
St. Helens Education Committee.—Dentist. £400.
St. Mary's Hospital for Women and Children, Plaistow, E.—P. to In-patients and Out-patients, P. to Skin Out-patients, Dental S.
St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Anæsth. £25.
Salford County Borough Education Committee.—Asst. School M.O. £400 to £600.
Salford Royal Hospital.—Three Anæsths. £50.
Sheffield Royal Infirmary.—Asst. H.P. £150. Oph. H.S. £150.
Southampton County Borough Isolation Hospital.—Res. M.O. £400.
Southern Rhodesia.—District S.'s. £375 to £500.
University College Hospital, Gower-street, W.C.—Clin. Asst.
Wakefield General Hospital.—Jun. H.S. £150.
Wigan Infirmary.—Jun. H.S. £225.
Willesden Urban District Council.—Locum Tenens Asst. M.O. 10 gns. p.w.
Winchester, Park Prewett Asylum.—Med. Supt. £1000.
Winchester, Royal Hampshire County Hospital.—Obstet. P.
Wolverhampton and Staffordshire General Hospital.—Path. & Bac. £350. Also Res. M.O. £200.
Worksop, Victoria Hospital and Dispensary.—H.S. and M.O. £250 to £300.
York Dispensary.—Res. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

BLAKEWAY.—On June 29th, at The Cottage, Poplar-grove, Woking, the wife of the late Harry Blakeway, M.S., F.R.C.S., B.Sc., of a daughter.

COLLINS.—On June 26th, at the White House, Yoxford, Suffolk, the wife of Dr. E. A. Collins, of a son.

WINDER.—On June 23rd, at Upper Fitzwilliam-street, Dublin, the wife of Captain A. S. M. Winder, R.A.M.C., of a daughter.

MARRIAGES.

HOWE—BARRETT.—On June 24th, at St. Barnabas Church, Woodside Park, George Hubert Howe, L.D.S. R.C.S. Eng., to Kathleen, elder daughter of the late Mr. S. G. Barrett, of Liskeard, Cornwall, and of Mrs. Jenking, Plymouth.

PHILLIPS—SMITH.—On July 2nd, 1919, at All Saints' Parish Church, Bradford, by the Rev. A. F. Alston, James Phillips, F.R.C.S.E., Major, R.A.M.C., to Rose Agnes Smith, daughter of Mr. David Smith, of Windsor-road, Southport.

SILLARS—OGILVY.—On June 26th, at the Parish Church of Clova, Kirriemuir, Joseph Sillars, M.B., C.M., Kirriemuir, to Margaret Elizabeth, youngest daughter of the late Mr. David Ogilvy and Mrs. Ogilvy, Rottal, Clova.

SMITH—DRUMMOND.—On June 28th, at St. Augustine's, Queen's Gate, Captain Charles Rees Smith, R.A.M.C., to Helen Fidena, youngest daughter of the late John Drummond, Esq., of Sevenoaks, and Mrs. Drummond, Manson-place, Queen's Gate, S.W.

WILLIAMS—DURANT.—On June 26th, at Highbury Chapel, Bristol, Captain Geoffrey Commeline Williams, R.A.M.C. (T.F.), to Irene Mary, daughter of the Rev. W. F. and Mrs. Durant, of Woodland-road, Tyndall's Park, Bristol.

DEATHS.

CARTWRIGHT.—On June 23rd, at Oswestry, John Peploe Cartwright, M.R.C.S. Eng., aged 70.

FEARNSIDES.—On June 28th, as the result of a boating accident, Edwin Greaves Fearnsides, M.D., F.R.C.P., Assistant Physician at the Hospital for Epilepsy and Paralysis, Maida Vale, late Major, R.A.F. Medical Service.

MCCALL.—On June 27th, of pneumonia, at a nursing home, Sir John McCall, K.C.M.G., M.D., LL.D., Agent-General for Tasmania, aged 58.

PUREFOY.—On June 27th, at his residence, Merrion-square, Dublin, E. Dancer Purefoy, LL.D., M.D., F.R.C.S.I., late Master of the Rotunda Hospital, Dublin.

SAVERY.—On June 25th, 1919, at Budleigh Salterton, Devon, Dr. W. H. Savery.

SIMPSON.—On June 27th, at Scroope-terrace, Cambridge, Captain James Christian Simpson, R.A.M.C. (T.), M.D. Edin.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BALE, JOHN, SONS, AND DANIELSSON, London.
Barbed Wire Disease: A Psychological Study of the Prisoner of War. By A. L. Vischer, M.D. Translated from the German with additions by the Author. With Introduction by S. A. Kinnier Wilson, M.D. Pp. 84. 3s. 6d.

CHURCHILL, J. AND A., London.
First Lines in Dispensing. By R. W. Lucas, F.I.C., and H. B. Stevens, F.I.C. 2nd. ed. Pp. 182. 6s.

HEFFER, W., AND SONS, London.
Practical Physiological Chemistry. By S. W. Cole, M.A. 5th ed. With Introduction by Professor F. G. Hopkins. Pp. 401. 15s.

HEINEMANN, WILLIAM, London.
Anæsthesia and the Nurse's Duties. By A. de Prenderville. With Introduction by Sir James Cantlie, K.B.E. Pp. 100. 3s. 6d.
Anaphylaxis and Anti-Anaphylaxis and their Experimental Foundations. By Dr. A. Besredka and Dr. E. Roux. English edition by S. Roodhouse Gloyne, M.D. Pp. 145. 6s.

KEGAN PAUL, TRENCH, TRÜBNER AND CO., London.
Geriatrics: The Diseases of Old Age and their Treatment. By I. L. Nascher, M.D. 2nd ed. Pp. 527. 21s.
Rest, Suggestion, and other Therapeutic Measures in Nervous and Mental Diseases. By F. X. Dercum, M.D. 2nd ed. Pp. 395. 21s.

MACMILLAN AND CO., London.
On Longevity and Means for the Prolongation of Life. By Sir Hermann Weber, M.D., F.R.C.P. 5th ed. Pp. 292. 12s. net.

MURRAY, JOHN, London.
Heredity. By Professor J. Arthur Thomson. 3rd ed. Pp. 627. 15s.

THE NILE MISSION PRESS, Cairo.
The Surgery of Egypt. By F. C. Madden, M.D. Pp. 394.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, July 9th.

NEUROLOGY (Hon. Secretary—C. M. Hinds Howell): at 8.30 P.M.

Paper: Colonel E. Farquhar Buzzard: Encephalitis Lethargica and its Results.

Colonel Buzzard will also demonstrate Cases.

Friday, July 11th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham); at 8.30 P.M.

Paper: Dr. C. G. Jung (of Zurich): The Problem of Psychogenesis in Mental Diseases.

NOTICE.

The Society's house will be closed for cleaning during August.

The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine," is also open to all medical officers. Particulars of this will be supplied by the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY, July 9th.—4.30 P.M., Lecture:—Dr. Gosse: Rheumatic Myocarditis.

Communications, Letters, &c., to the Editor have been received from—

A.—Col. J. G. Adami, C.B.E., A.D.M.S.; Major A. Abrahams, O.B.E., R.A.M.C.; Dr. J. L. Aymard, Cape Town; Sir T. Clifford Allbutt, K.C.B., Cambridge.

B.—Miss M. A. Broadhurst, Lond.; Dr. S. G. Billington, Lond.; Dr. J. Brown, Blackpool; British Science Guild, Lond.; Major P. Bahr, D.S.O., R.A.M.C.; Dr J. F. Briscoe, Bournemouth; Col. R. J. Blackham, C.B., C.M.G., C.I.E.

C.—Dr. H. G. P. Castellain, Lond.; Major W. B. Cosens, R.A.M.C.; Dr. H. P. Cholmeley, Forest Row; Dr. F. G. Crookshank, Lond.; Dr. P. J. Cammidge, Lond.

D.—Mr. H. Dickinson, Lond.; Dr. J. F. H. Dally, Lond.; Mr. G. W. Dorley-Brown, Lond.

E.—Dr. S. Elias, Rotterdam; Mr. D. L. Badie, Edinburgh; Col. T. R. Elliott, C.B.E., D.S.O., A.M.S., Lond.

F.—Dr. R. R. Fothergill, Hove; Mr. C. Frankau, C.B.E., D.S.O.; Miss Kate Fedarb, Southsea; Capt. J. N. Fergusson, R.A.M.C.

G.—Major W. R. Gallie, R.A.M.C.; Mr. U. Ghilardi, Harrow; Dr. A. G. Gibson, Oxford: Col. G. E. Gask, C.M.G., D.S.O., A.M.S.; Dr. A. K. Gordon, Lond.; Capt. J. Geoghegan, R.A.M.C.; Dr. A. Gresswell, Lond.

H.—Hampstead Medical War Committee.

K.—Dr. W. Kidd, Cheltenham; Mr. H. Kimpton, Lond.

L.—Dr. T. M. Legge, C.B.E., Lond.; Dr. C. E. Lakin, Lond.; London (Royal Free Hospital) School of Medicine for Women, Warden of; Mr. J. B. Lamb, Lond.; Mr. E. M. Little, Lond; Dr. R. B. Low, C.B., Lond.

M.—Dr. J. B. Mennell, Lond.; Minister of Health, Lond.; Dr. H. A. Macewen, Lond.; Dr. A. S. MacNalty, Streatley-on-Thames; Dr. D. Macfarlan, Philadelphia; Miss A. R. Martin, Eastbourne.

N.—National League for Health, Maternity and Child Welfare, Lond., Sec. of; National Alliance of Employers and Employed, Lond., Sec. of; National Medical Union, Lond., Asst. Sec. of; Mr. A. E. Newbould, M.P., Lond.; N. E. O.

O.—Dr. S. Otabe, Benenden.

P.—Dr. A. S. Percival, Newcastle-on-Tyne; Mr. C. A. Pannett, Lond.; Dr. Bedford Pierce, York.

R.—Royal Society of Medicine, Lond.; Dr. F. Rees, Wigan; Royal Society of Arts, Lond., Sec. of; Dr. J. D. Rolleston, Lond.; Dr. E. H. Ross, Lond.

S.—Col. A. L. Smith, C.A.M.C.; Dr. Samy Sabongi, Abbassieh; Dr. M. B. Shipsey, Erdington; Dr. E. B. Sherlock, Darenth; Prof. W. Stirling, Manchester; Dr. A. G. Shera, Lond.; Messrs. Siemens Bros. and Co., Lond.

T.—Dr. W. W. C. Topley, Lond.; Sir John Tweedy, Lond.

U.—University of Glasgow.

V.—Mr. R. M. Vick, C.B.E., Lond.

W.—Dr. J. V. Watson, Bolton; Dr. R. T. Williamson, Manchester; Dr. L. A. Weatherly, Bournemouth; Mr. A. C. Wilson, Lond.; Mrs. M. Whyte, Banteer; Dr. R. P. White, Wigan.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

THE Hampstead Medical War Committee announce that Lieutenant-Colonel J. R. Whait, D.S.O., 124, Finchley-road, N.W.3; Major H. Meggitt, 180, Belsize-road, N.W.6; Captain W. S. George, 110, Finchley-road, N.W.3; Captain A. W. George, "Surrey House," Shootup Hill, N.W.2; Captain W. E. Hills, 25, Church row, N.W.3; Captain H. C. Malleson, 30, Thurlow-road, N.W.3, are now demobilised and have returned to practice.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL PIONEER AERONAUTS.

BY F. JOHN POYNTON, M.D.

The Airmen of the Eighteenth Century.

THE present seems to me an opportune time to give a few details, even though imperfect ones, of the part taken by our profession in the birth of aeronautics more than a century ago. We shall stray back to those fascinating times when brave pioneers, taking their lives in their hands, struggled to maintain the flickering life of this puling yet long-hoped-for infant, and we shall welcome with pride the men of our profession who helped to lead the way, Tytler and Jeffries, Sheldon and Sakaroff, among them. The reign of Louis XVI. was drawing to a close when his false brother, Egalité, the first royal aeronaut, was a witness of the classical ascents by de Rozier and d'Arlandes. How interesting, too, it is to recall that Garnerin, who first demonstrated to this country the use of the parachute, was aeronautical adviser to the great Napoleon. These early days were not wholly unscientific, for experiments were made with animals before de Rozier's first ascent in 1783, and I have in my possession an interesting little conversation in French dated 1783 and illustrated by a pencil sketch of the Montgolfier balloon with the conversationalists in the car. They were a cock, a duck, and a sheep, and their views on their elevated position are entertaining. A problem for the psycho-analyst is provided by the fact that the Comte d'Arlandes, who shared with de Rozier the glory of the first balloon ascent, was later broken for cowardice in the French army. The collector of medical pictures also will be interested in the first illustration of an injured aeronaut. This represents Arnold, who was pilloried in the *Gentleman's Magazine* in 1785, Vol. II., as "the Unsuccessful Aeronaut." He is seen with his balloon in one corner of the picture, dressed in the costume of the period, stumping on a wooden leg.

The First British Aeronaut.

The first Briton to make an ascent in this island was "ballooning" or "enterprising" Tytler, who raised himself some 300 ft. from the Comeby Gardens, Edinburgh, on August 27th, 1784. He was a Scot born at Fearn, and was a strange and erratic genius whose fate should stir pity in us, if also, at the same time, some amusement. A poor man, the son of a Scotch minister, he earned a little money as a medical assistant on board a vessel plying to Greenland, with which he completed an honourable student's career at Edinburgh. He then made his first mistake, not unknown even in these days, by marrying a lady before he had means to support a family. He failed to establish himself in Edinburgh, and, always ahead of his times, tried next to conduct a laboratory at Newcastle. When that failed he started a chemist's shop at Leith. Meantime his wife left him and the children and retired to the Orkneys. Now Tytler had a literary turn with novel views on religion, and set to work to write some essays, which he printed on a printing machine of his own invention. This effort attracted attention and he commenced to establish a position for himself as a writer and editor. In 1776 he edited the second edition of the Encyclopædia Brittanica, and apparently he was now on the up line to fortune. However, in 1783 the balloon epoch commenced, and he was badly bitten by the desire to become an aeronaut and took to the making of fire balloons. He snatched at great cost this one laurel leaf, the first ascent from the ground in this island. It was his only successful attempt, and from henceforth Tytler's career was once more downhill. Soon after he joined the cause of the "Friends of the People" and wrote a seditious article, for which he had to fly the country. After writing a treatise on surgery in Ireland he eventually went to America and died at Salem, away from all his relatives and friends.

The First Cross-Channel Flight.

Jeffries was an American physician, but unfortunately at present I have not had the opportunity of discovering whether any biography is extant of his career, and would welcome any information on this point. He was the hero, with Blanchard, of the first crossing of the Channel, though he had previously ascended with the same aeronaut from the Rhedarium, near Grosvenor-square. The account of this Channel flight written by himself is a record of serene bravery, for an undertaking of this kind was a big thing in those days. Strong adverse winds had delayed the departure from Dover, and it was not until Jan. 7th, 1785, that the ascent was made on a still, bright, winter day. The aeronauts made very slow progress in their balloon,

for in 50 minutes they were only one-third of the way across the Channel! Trouble soon commenced and took a simple shape, the balloon insisting on descending into the sea. Ballast was heaved over, and then followed numerous pamphlets, which one would have thought from modern experience of such things would have lightened almost anything. For a while, indeed, there was an improvement but not for long, the precious instruments had to go, the balloon trappings, an empty bottle, their great coats, their lesser coats, their breeches, and so on. But what a man! He climbs up the netting and is enraptured at the lovely view he obtains as the balloon slowly revolves! Underneath a January sea is waiting for him, above is a winter sky, and around his immediate person a deficit of clothing! Fortunately for us all, just as they neared the French shore the balloon swept upward, cleared the cliffs, and carried them over the forest of Guines. Trouble was not over yet, but it was of a slightly different kind now, and the doctor's feelings must have been akin to those of the boy who eyes the volume and character of the birch that awaits him. It will be apparent that as the balloon was again rapidly falling, some importance was to be attached to the nature of the tops of the trees upon which they were landing. Jeffries thought they looked both high and hard, and he does incidently admit that he and his colleague were cold. Now comes the acme of resource and as great a proof of bravery as ever the world can claim, he remembers that their bladders are full—for the weather was cold and the bottle they threw over was empty and the reflexes in those hardy old days were apparently impervious to fear. He estimated that thus they lightened the balloon by some 4 to 5 lb. and, glorious to tell, they landed softly on those trees and were soon warm and safe in the kindly hands of French hosts.

A Professor in the Air.

Sheldon has the credit of being the first Englishman to make a balloon ascent in England. This event was on Oct. 16th, 1784, although others have maintained that Sadler held this prize, ascending on the 12th from Oxford. There can be no doubt, however, that James Sadler was the first English aeronaut, for he made many successful journeys and had a great career as the first English aerial traveller. Sheldon at this time was professor of anatomy at the Royal Academy, and had been a pupil and assistant of William Hunter in Great Windmill-street. He subsequently became a surgeon to the Westminster Hospital and later to the Devon and Exeter Hospital. Blanchard took him under his wing and made his fourth ascent with him from Chelsea. One enthusiast described their trip as "the most extraordinary voyage ever performed by a sublunary being." Sheldon, too, was apparently satisfied, and returned to his anatomical and surgical studies somewhat humbled in scientific spirit, but not altogether sorry to be once more on the surface of the earth. It is of interest that in the second rapid ascent of the balloon Sheldon complained of pain in the ears.

Remarkable Observations.

Sakaroff was a Russian aurist who accompanied a very remarkable aeronaut, Robertson, in his Russian balloon ascents very early in 1800. Robertson was one of the few balloonists who made a real success of his job, for he died, we are informed, worth a million! He combined with courage enterprise and a bright imagination. He and his comrades were repeatedly making strange discoveries in the air. For example, one gentleman's head bulged so much that his hat would not fit, and on another occasion their voices became inaudible. One very interesting observation was, however, made by Robertson, that the electric spark is lengthened in the rarefied atmosphere, thus anticipating by many years the Geissler tubes. Sakaroff fades into shadow before his remarkable comrade, but doubtless he added to the early stock of knowledge upon ear troubles in aeronautics. These famous old heroes may make us smile over their difficulties, ambitions, and boastings, but it is with pride that one reads that our profession, apart from its purely scientific contributions to the subject, faced also the early practical dangers and brought us great honour.

COLONIAL HEALTH REPORTS.

Leeward Islands.—The total population of the colony at the last Census was 127,193. In the province of Antigua, with an estimated population of 31,782, the births in 1917 numbered 1076, being 33·86 per 1000, the percentage of legitimate and illegitimate births being 24·16 and 75·84 respectively. The death-rate was 29·89 per 1000, and the deaths of children under one year, exclusive of stillbirths, were 19·79 per cent. of the total. In St. Kitts the birth-rate was 34·909 per 1000, in Nevis 34·683, and in Anguilla 43·240, while the death-rate for St. Kitts was 29·245, for Nevis 21·207, and for Anguilla 14·767 per 1000. The illegitimate birth-rate for St. Kitts was 25·832 per 1000, for Nevis, 21·774, and for Anguilla 21·007, as against the legitimate birth-rate of 9·070, 12·908, and 22·254 for St. Kitts, Nevis, and Anguilla respectively. In Dominica the birth-rate was 30·65 and the death-rate 28·18 per 1000; the illegitimate births exceeded the legitimate by 203. In Montserrat the birth-rate was 37·80 and the death-rate 16·21 per 1000. The general health was satisfactory. During 1917 6174 patients were admitted into the hospitals, and there were 340 deaths therein. The average number of inmates in the central lunatic asylum at Skerrets, Antigua, was 153. There are two leper asylums—one at Rat Island, Antigua, and the other at Fort Charles in St. Kitts. The average daily number of inmates for the two institutions was 60 males and 48 females.

British Honduras.—The estimated mean population in 1917 was 42,732 (21,308 males and 21,424 females). The birth-rate was 40·275 and the death-rate 31·288 per 1000. Illegitimate births were 39·57 per cent. of the total. The health of the Colony during the year was remarkably good, and considerable progress was made in the campaign against the hookworm disease, especially in the Orange Walk district.

Sierra Leone.—The number of European and American residents in 1917 was 1090, of whom 636 were military and 244 officials. The deaths of Europeans numbered 22, including 12 landed from vessels; nine officials were invalided during the year. The population of the Colony at the last Census was 75,572 (41,001 males and 34,571 females). The birth-rate in 1917 was 20 and the death-rate 24 per 1000; in Freetown the birth-rate was 23 and the death-rate 33 per 1000. The excess of deaths over births registered in the colony has been apparent in the returns for some years past and suggests that the population is on the decrease. There is, however, a constant influx into the peninsula of natives from the Protectorate, and the figures given must in any case be accepted with caution, as the present system of registration can hardly be described as effective. It is impossible to give any valuable account of the chief causes of death, as medical certification of death is neither compulsory nor usual. The population of the Protectorate at the Census of 1911 was estimated at 1,327,560, of whom 1,323,151 are natives other than those in military barracks, while the remainder, numbering 3426, are non-natives. In both the Colony and the Protectorate, but more especially in the latter, cases of small-pox made their appearance from time to time in 1917, but the infection was prevented from spreading into an epidemic. Thirteen public vaccinators were appointed, and out of a total of 105,988 vaccinations reported as performed 68,763 were returned as successful. The number of patients treated at hospitals and dispensaries throughout the Colony and Protectorate in 1917 was 51,765. At the Leper Asylum there were 4 patients at the beginning of the year and 4 were admitted; 2 died and 4 absconded. To the European Nursing Home there were 138 admissions during the year; of these, 62 were officials and 44 belonged to the mercantile and shipping communities.

Straits Settlements.—The estimated population of the Colony in 1917 was 809,869, the birth-rate was 30·65 per 1000, and the death-rate 36·98. The principal causes of death were malaria (3766 cases), infantile mortality (7571), tuberculosis (3084), beri-beri (2075), and dysentery (1054). There were 176 deaths from small-pox, nine from cholera, and 44 from plague.

THE EUROPEAN CORN-BORER.

THE appearance of the European corn-borer (*Pyrausta nubilalis*) in certain parts of the United States has led to the issue of an Order in Council prohibiting the importation of "all corn fodder or corn stalks, whether used for packing or otherwise, green sweet corn, roasting ears, corn in the cob, or corn cobs" from the affected areas into Canada. A circular dealing with this pest, said to be one of the most destructive that has ever reached America, has been issued by the Canadian Department of Agriculture, and can be obtained free from the Dominion entomologist at Ottawa.

LE CARNET DE POLITESSE.

THE number of necessary "carnets"—or booklets entitling the owner to live, move, and have his being—has grown exceedingly in France, especially during the war, for, in spite of murmurings which are almost universal amongst his subjects, Monsieur Lebureau is still the reigning tyrant in French administration. That he should have captured the control of politeness among a people world-famous for the suavity of their manners is, indeed, a notable tribute to his stability and vigour. For many months there have been notices posted in tramcars and in the metro reminding passengers that they should give up their seats to the "mutilés"; now it seems that this has become a legal obligation. Every soldier who is blind or so wounded that standing becomes painful to him is entitled to a carnet, which gives him precedence in the seating accommodation. Even the phlegmatic Britisher needs no encouragement to make him offer his seat to a disabled fellow-countryman, and it is hard to believe that any wounded soldier, French or British, would stoop to enforce so obvious a right. The carnet de politesse is really an official aspersion on the nature of French politeness.